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MAKPDB REPORT
Nr 541 (88)

TEST RESULTS

MM STAGE I, S/N 0012199

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October 1988

Aircraft & Missile Division
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Coordination and Review

Project Title: Stage I Dissected Motor S/N 0012199
Phase XVII Propellant and Component Testing
Test Report No. 541 (88)

Office Symbol	Title	Signature
MAKPDBM	Chief, Machine Shop Unit	
MAKPDBC	Chemist	
MAKPDBC	Chief, Chem. Analysis Unit	
MAKPDBA	Mathematician/Statistician	
MAKPDBA	Chief, Data Analysis Unit	
MAKPDB	Chief, Propellant Analysis Lab	

ABSTRACT

Testing was performed to determine the useful shelf/service life for LGM-30 Stage I Rocket Motors. A three year storage program for propellant and components was started in May 1961. This program was then extended to a ten year study and later continued indefinitely to assure that deterioration in motor physical characteristics could be detected in time to take some corrective actions before the weapon system performance deteriorated below an acceptable level.

This report covers propellant test data for motor S/N 0012199. Planned dissection of selected motors in the future will provide samples for continued component testing.

The data is presented in the form of regression analysis and the trends are projected 24 months beyond the last test date.

From the statistical analysis of all data tested to date, significant degradation of the propellant does not appear likely for at least two years past the oldest data point.

Future testing and reporting will be conducted on individual dissected motors.

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GLOSSARY OF TERMS AND ABBREVIATIONS

Aging Trend	A change in properties or performance resulting from aging of material or component
CSA	Cross Sectional Area
E	Modulus (PSI), defined as stress divided by strain along the initial linear portion of the curve
EB	End Bonded
EGL	Effective Gage Length
em	Strain at maximium stress
er	Strain at rupture
DB	Dogbone
Degradation	Gradual deterioration of properties or performance
"F" ratio	The ratio of the variance accounted for by the regression function to the random unexplained variance. The regression function having the most significant "F" ratio is used for plotting data. That ratio is also used in detecting significant changes in random variation between succeeding time points.
JANNAF	Joint Army, Navy, NASA, Air Force Committee
MAKPDB	Propellant Analysis Facility at OOALC
OOALC	Ogden Air Logistics Center
Regression Equation	The general form of the regression equation is $Y = a+bX$
Regression Line	Line representing mean test values with respect to time

GLOSSARY OF TERMS AND ABBREVIATIONS (CONT)

Sb of SB	Standard error of estimate of the regression coefficient
Se or SY or SE	Standard deviation of the data about the regression line
Sm	Maximum Stress
Sr	Stress at Rupture
TCLE	Thermal Coefficient of Linear Expansion
Tg	Glass Transition Point
Standard Deviation (Sy)	Square Root of Variance
Strain Rate	Crosshead speed divided by the EGL
"t" test	A statistical test used to detect significant differences between a measured parameter and an expected value of the parameter (determines if regression slope differs from zero at the 95% confidence level)
Variance	The sum of squares of deviations of the test results from the mean of the series after division by one less than the total number of test results
3 Sigma Band	The area between the upper and lower 3 sigma limit. It can be expected that 99.73% of the inventory represented by the test samples would fall within this range assuming that the population is normally distributed
90-90 Band	It can be stated with 90% confidence that 90% of the inventory represented by the test samples would fall within this range assuming that the population is normally distributed.

GLOSSARY OF TERMS AND ABBREVIATIONS (CONT)

T	Temperature in degrees Kelvin
AT	Stress relaxation time at temperature T
t	Stress relaxation time in seconds
E(t)	Stress relaxation modulus
TIG	Ignition Temperature
R	Correlation
OY	Standard deviation of Y variable
ECM	Electro-chemical Milling

INTRODUCTION

A. Purpose:

This report contains test data from samples of LGM-30 Stage I, Wing II TP-H1011 propellant obtained from dissected motor S/N 0012199. Testing was performed by the Propellant Test Facility (MAKPDB) for the Minuteman Motor Engineers (MMGR) under Project M46288C. This report is the seventeenth of this series. Data from this test period and propellant test data from the sixteen previous reports, for motor S/N 0012199, were entered into the G085 computer for regression analysis. The regressions are shown in this report (ref. figures).

B. Test Program:

The LGM-30 laboratory and component program includes the testing of materials used in the main case and main grain propellant. Table 1 outlines the test program.

C. Historical Background:

In May 1961 Thiokol Corporation began a three year LGM-30 laboratory storage and test program to determine the rate of degradation with age for Stage I materials. During June 1962 and again in August 1963, additional samples were included. New samples were added in July and August 1964 when the surveillance test program was extended to ten years (Test Plan 0717-62-0967, 53-8). The samples added to the inventory in 1964 were considered to be a new population, but were combined in regression analysis with the three dissected motors.

The history of testing of these materials is found in MQQP Report Nrs. 109A(67), 144(68), 208(71), MANCP Report Nr. 358(76), MANPA Report Nr. 482(82), and MAQCP Report Nr. 522(87). Physical transfer of the specimens from Thiokol Corporation to Ogden Air Logistics Center (ALC) was made in June 1967.

Until 1982, due to a limited number of dissected motor samples, data from all motors were combined for statistical analyses. In 1982, key LRSLA parameters were reported for individual motors, MANPA Report Nr. 470(82).

STATISTICAL ANALYSIS

The objective of this statistical analysis is to determine the existing aging trends in Minuteman Stage I Motor S/N 0012199. The test results with data analysis are offered to Service Engineering to aid in preparation of motor serviceability reports.

There will be four different types of plots presented in this report.

1. Regression Analysis with 5% significance level is the method used for statistical analysis and to produce aging trends on the accumulating data. The linear equation $Y = a + bX$ was found to be the best fit model for all regressions in this report. The unique mathematical regression equations are on the top of each plot. Each point (symbol=1) on a regression plot represents a mean value at that particular age at test, and their weights are on the sample size summary page that follows. All regression equations are calculated on all individual test values per age.

All analysis is assuming that the data in Normally Distributed and Randomly Sampled. The regression plots have two sets of tolerance bands around each trend line. The solid lines are a 90-90 tolerance band. The variance of the data about each regression line is used to compute a tolerance interval such that at 90% confidence, 90% of the sample distribution will fall within this interval. The dashed lines represent a 3-sigma band. This 3-sigma band sets an area around the regression lines, of plus or minus three (3) standard deviations. Theoretically 99.72% of the data should fall with this 3-sigma band. With the assistance of the regression equations these tolerance bands have been extrapolated 24 months beyond the date of last testing.

The 't' value and the significance of this statistic will be given as an indication of the "statistical significance" of the slope of the regression trend lines as it is compared to a line of zero slope. When a regression slope is labeled as significant it should be noted that the slope of the trend line is significant from a statistical standpoint and that a change over time is occurring. **NOTE: A significant indication does not necessarily mean that the change is significant in regards to motor operational performance.** The over-all status of these regression trends are presented in table 2.

2. The Master Stress Relaxation curve is a composite curve representing the behavior of the polymer (propellant substance) over a wide range of time and temperature relationships. Stress relaxation (stress decay) tests require a curve constructed at a given level (3%). With this curve a stress relaxation modulus value for any combination of time and temperature may be found under operating conditions.

3. The Failure Envelope curve characterizes the ultimate tensile properties of an unfilled elastomer. The envelope also serves as a criterion of the applicability of time-temperature superposition for reducing ultimate property values to functions of time alone. This unique curve also provides a good indication of possible strain at any prescribed stress level applied to the specimen within the limits of the data.

4. The Mini-Thin plots provide added in-depth tracking of the physical properties of propellant in a critical area. The samples are composed of consecutive 0.1" slices in order of cut as explained in each title. Use of smaller specimens have assisted in displaying the maximum stress differences using small quantities of propellant.

A comparison of the latest new regressions to previous data has indicated the following:

REGRESSIONS	FLATTER SLOPES
Tensile (21 ea)	87%
Stress Relaxation (8 ea)	100%
Strain Dilatation (5 ea)	80%
Tear Energy (1 ea)	100%
Hardness (2 ea)	0%
TCLE (3 ea)	100%
Burn Rate (2 ea)	50%
DTA (3 ea)	33%

The flatter the slope the closer the Regression Trend Line is becoming a line with zero slope. The regression trends that are not getting flatter, indicate that the propellant is degrading with time.

Table 1

TEST PROGRAM

Test	Conditions	Configuration	Nr Spcmn	Total Spcmns
Tensile, Low Rate	77°F, 2 & 20 in/min	JANNAF Dogbone	6 ea	12
Tensile, High Rate	77°F, 1750 in/min	3/4" GL Dogbone	6 ea	12
Tensile, High Rate	77°F, 1750, 600 psi	3/4" GL Dogbone	6 ea	12
Biaxial,Constant Strain	77°F	3/4" Gl,5" Rail	6 ea	12
Stress Relaxation	77°F, 3 & 5% Strain	1/2"x1/2"x4"	6 ea	12
Poisson's ratio (Strain Dilatation) 10, 15, 20, 25 & 30%	77°F +/- 2°	0.50"x0.50"x4"	6 ea	6
Tear Energy	77°F +/- 2°	0.1"x1.18"x3"	16 ea	16
TCLE	5°C rise/minute	0.200 Wafer (about 4 Sq In)	6 ea	6
HOE	77°	1/2"x3/8"x1"	6 ea	6
Burn Rate	77°	.156"x.156"x5"	6 ea	12
DTA	77° Start 500 & 1000 psi	0.040" Wafers	6 ea	6
Failure Envelope	-50°,-20°,10°,40° 77°,130°,180°F, +/-2°F at 0.2,2.0 & 20 in/min CHS	JANNAF Dogbone	3 ea	

TEST RESULTS

Regression analysis is the method used in the analysis of motor S/N 0012199 test results. The regressions are presented in the report and the respective sample size summaries.

A. LOW RATE TENSILE:

This test is designed to show propellant capabilities while under storage, handling and shipping conditions by testing the physical properties of stress, strain, and modulus. Tests were conducted utilizing an Instron floor model universal test instrument with an Instron environmental chamber. JANNAF dogbones were strained at a crosshead speed of 2.0 and 20.0 in/min CHS.

1. Low Rate Tensile (2.0 in/min CHS): The results are as expected. Strain at maximum stress and strain at rupture show statistically significant decreasing trend line slopes. Maximum stress, stress at rupture and modulus show statistically significant increasing trend line slopes. This is the normal trend for these parameters, in all regressions the slopes are gradual and no problems are expected in the propellant (ref. figures 1 thru 5).

2. Low Rate Tensile (20.0 in/min CHS): The strain at maximum stress and strain at rupture and modulus show non-significant trend line direction or zero slopes. Maximum stress and stress at rupture trend line slopes are both significant in a positive direction. The trend line slopes for stresses are gradual. These results are as expected (ref figures 6 thru 10).

B. HIGH RATE TENSILE:

This test is designed to provide a method of studying the physical properties of solid propellant under simulated firing and flight conditions. Tests were conducted utilizing an MTS High Rate Tensile Tester.

1. High Rate Tensile (1750 in/min CHS): The strain at maximum stress shows a statistically significant slope in the positive direction and the strain at rupture shows a non-significant trend line direction. Maximum stress and stress at rupture also show a non-significant trend line direction. The modulus shows a statistically significant decreasing trend line. This is not a normal trend for modulus, however, the large variance in the early testing could have skewed the trend line. This does not appear to present a problem at this time (ref. figures 11 thru 15).

2. High Rate Hydrostatic Tensile (1750 in/min CHS, 600 psi): The strain at maximum stress and strain at rupture show a statistically significant increasing trend line in a positive direction. The maximum stress, stress at rupture and modulus show non-significant trend lines (ref. figures 16 thru 20).

C. CONSTANT STRAIN (10% initial energy and + 1% every 48 hours to rupture): The strain at rupture shows a non-significant decreasing trend line slope. No problems with the propellant are indicated by this test (ref. figure 21).

D. STRESS RELAXATION:

In this test specimens are strained to a given strain and the stress is recorded at specified times. From this data the modulus is calculated for each time interval and is reported as stress relaxation modulus.The force required to maintain the specimen at an extended constant deformation is measured as a function of time.

1. Three Percent Strain: The stress relaxation modulus for the three percent strain shows a statistically significant trend line slope in the increasing direction for the 10, 50, 100 and 1000 seconds. All of the trend lines show a gradual increase with respect to age (ref. figures 22 thru 25).

2. Five Percent Strain: The stress relaxation modulus at 10 seconds shows a statistically significant gradual increase in the trend line slope. The trend

line slopes for the 50, 100 and 1000 second modulus does not show a change in the trend line slope (ref. figures 26 thru 29). The propellant seems to be performing satisfactorily.

E. STRAIN DILATATION: In this test as the propellant is strained the volume changes and this is a measure of dilatation. Tensile strain allows deformation to occur which is measured as a change in volume, and calculated as Poison's Ratio.

The strain dilatation at 10% strain shows a statistically significant increasing trend line slope. At 15 and 30% strain the trend line slopes are non-significant. The strain dilatation at 20 and 25% strain shows a statistically significant decreasing trend line (ref. figures 30 thru 34). This is not the normal trend and is probably caused by the wide variance in the test results.

F. TEAR ENERGY: The tear energy regression shows a non-significant trend direction (ref. figure 35).

G. HARDNESS (Shore A, Initial and 10 seconds):

1. Initial Hardness: the initial hardness trend line slope shows a significant gradually decreasing trend line slope (ref. figure 36).

2. Ten (10) second Hardness: The 10 second hardness trend line slope shows a statistically significant gradually decreasing trend line (ref. figure 37).

H. THERMAL COEFFICIENT OF LINEAR EXPANSION (TCLE): The coefficient of linear expansion below and above the glass transition temperature and the glass transition temperature regression show non-significant trend line slopes (ref. figures 38 thru 40).

I. BURN RATE: The Burn Rate regression for 500 psi pressure shows a statistically significant increasing trend line direction. This is substantiated by the DTA which also indicates the propellant is burning faster

(ref. figure 41). The regression for the 1000 psi test pressure shows a non-sig trend line direction (ref. figure 42).

J. DIFFERENTIAL THERMAL ANALYSIS (DTA): The endotherm regression shows a non-significant trend line direction (ref. figure 43). The exotherm and ignition temperature regressions show a statistically significant increasing trend line (ref. figures 44 and 45).

K. FAILURE ENVELOPE: The failure envelope for motor S/N 0012199 is shown in figure 46.

NOTE: Data for Sol Gel, Creep and Heat of Explosion (HOE) will be sent as an addendum to this report or will be included in the next regular report.

TABLE 2

REGRESSION TREND LINE SUMMARY
MOTOR Nr. 0012199

TEST	TREND
Low Rate Tensile, 77°F, CHS=2.0 in/min.	
Strain at Max Stress	S(-)
Maximum Stress	S(+)
Strain at Rupture	S(-)
Stress at Rupture	S(+)
Modulus	S(+)
Low Rate Tensile, 77°F, CHS=20.0 in/min	
Strain at Max Stress	NS
Maximum Stress	S(+)
Strain at Rupture	NS
Stress at Rupture	S(+)
Modulus	NS
High Rate Tensile, CHS = 1750	
Strain at Max Stress	S(+)
Maximum Stress	NS
Strain at Rupture	NS
Stress at Rupture	NS
Modulus	S(-)
High Rate Tensile Triaxial, CHS = 1750, 600 psi	
Strain at Max Stress	S(+)
Maximum Stress	NS
Strain at Rupture	S(+)
Stress at Rupture	NS
Modulus	NS
Constant Strain	
Strain at Rupture	NS
Stress Relaxation Modulus, 3% Strain	
10 Seconds	S(+)
50 Seconds	S(+)
100 Seconds	S(+)
1000 Seconds	S(+)
Stress Relaxation Modulus, 5% Strain	
10 Seconds	S(+)
50 Seconds	NS
100 Seconds	NS
1000 Seconds	NS

Table 2 (cont)

REGRESSION TREND LINE SUMMARY
MOTOR Nr. 0012199

TEST	TREND
Strain Dilatation (Poisson Ratio)	
10% Strain	S(+)
15% Strain	NS
20% Strain	S(-)
25% Strain	S(-)
30% Strain	NS
Tear Energy, 77°F	
Cohesive Energy	NS
Hardness, Shore A	
Initial	S(-)
10 Second	S(-)
T.C.L.E.	
Glass Point	NS
Below T(G)	NS
Above T(G)	NS
Burn Rate	
500 psi	S(+)
1000 psi	NS
DTA	
Endotherm 1	NS
Exotherm 1	S(+)
Ignition Temperature	S(+)

NOTES:

NS = Non-significant trend compared to a line of zero slope.
S = Significant trend compared to a line of zero slope.
(+) = Significant slope in a positive direction.
(-) = significant slope in a negative direction.

SUMMARY

A. Tensile, Stress Relaxation, Strain Dilatation, Tear Energy and Thermal Coefficient of Thermal Expansion: For those regressions where statistically significant trend line direction are seen, the changes are gradual and no problems are indicated. The propellant has shown less strain capability and higher tensile strength and modulus as the age increases.

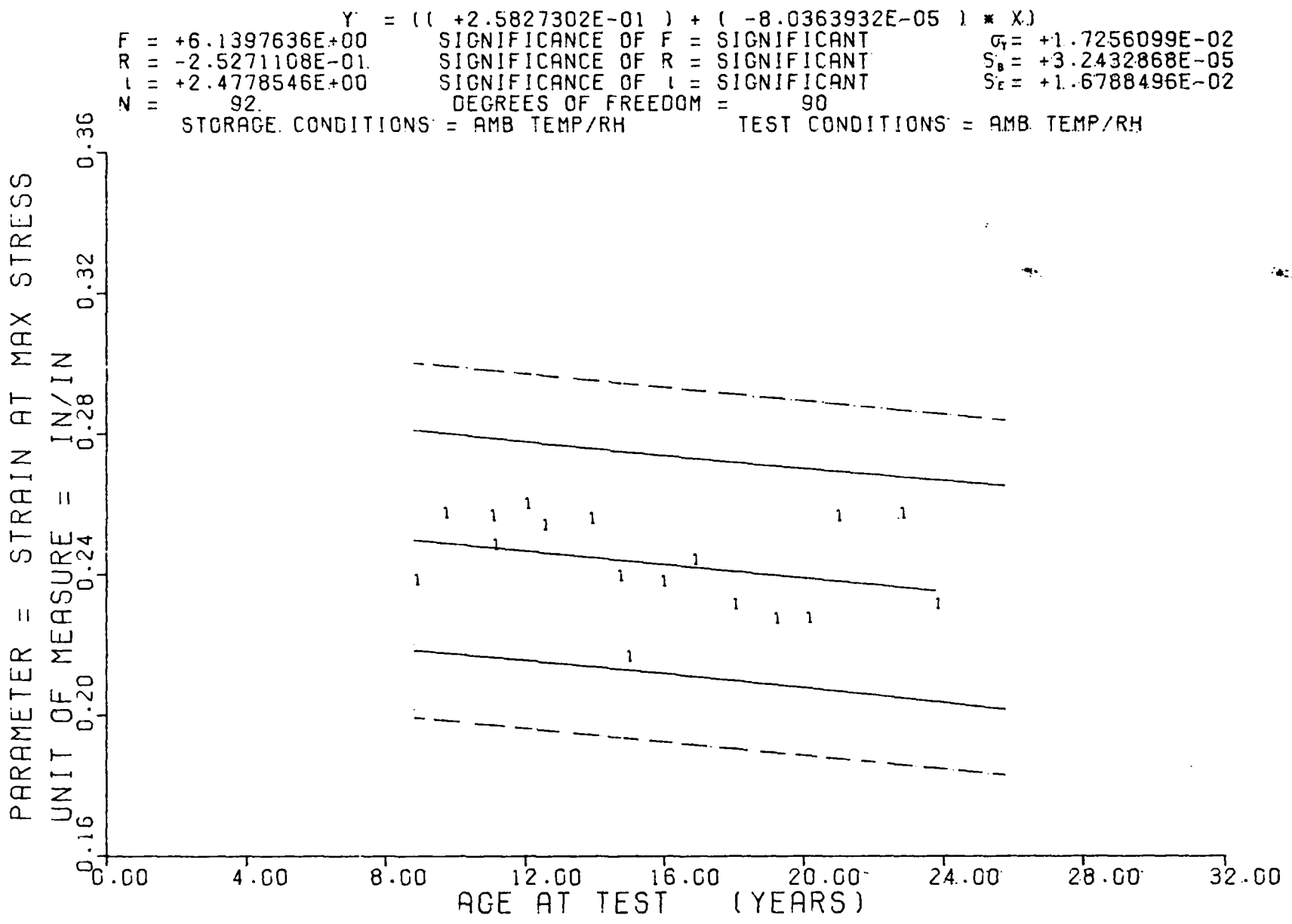
B. High Rate Tensile: For those regressions where statistically significant trend line directions are seen, the changes are gradual and no problems are indicated. The pressurized High Rate regressions show much greater capability than the unpressurized regressions.

C. Thermal and Combustion Properties: From the analysis, the thermal properties are not undergoing any drastic changes at this time with respect to age, although there are indications that the propellant is buring somewhat faster.

CONCLUSIONS AND RECOMMENDATIONS

A. Conclusions: The test results show that under present storage conditions, some of the physical and combustion properties of the propellant indicate statistically significant aging trends. However, where a significant trend is indicated, the slope of the trend line is gradual and no operational problems are expected for at least two years beyond the last test period.

B. Recommendations: It is recommended that testing and reporting be continued on propellant from motor S/N 0012199 on an individual basis to eliminate the biasing created by combined motor regressions. Additionally it is recommended that another Minuteman 1st Stage motor or motors be selected for dissection and testing, this would provide more continuity in providing data for analysis on the Aging and Surveillance Program.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F = +6.1397636E+00 SIGNIFICANCE OF F = SIGNIFICANT
R = -2.5271108E-01 SIGNIFICANCE OF R = SIGNIFICANT
I = +2.4778546E+00 SIGNIFICANCE OF I = SIGNIFICANT
N = 92. DEGREES OF FREEDOM = 90
STORAGE CONDITIONS = AMB TEMP/RH TEST CONDITIONS = AMB TEMP/RH
PARAMETER = STRAIN AT MAX STRESS
UNIT OF MEASURE = IN/IN
0.16
0.20
0.24
0.28
0.32
0.36
0.00
4.00
8.00
12.00
16.00
20.00
24.00
28.00
32.00
AGE AT TEST (YEARS)
STAGE 1 DISSECTED MOTOR=0012199,LOW RATE CHS=2.0 IN/MIN,STRAIN MAX. STRESS

Figure 1

**** LINEAR REGRESSION ANALYSIS ****

*** ANALYSIS OF TIME SERIES ***

AGE (MONTHS)	SPECIMENS PER GROUP	MEAN Y	STANDARD DEVIATION	MAXIMUM Y	MINIMUM Y	REGRESSION Y
106.0	5	+2.3719978E-01	+1.4858840E-02	+2.6099997E-01	+2.2199994E-01	+2.4975442E-01
116.0	6	+2.5616627E-01	+1.0117238E-02	+2.6699995E-01	+2.4399995E-01	+2.4895077E-01
132.0	6	+2.5541639E-01	+1.1410438E-02	+2.7119994E-01	+2.4099999E-01	+2.4766492E-01
133.0	5	+2.4715971E-01	+1.8777928E-02	+2.6489996E-01	+2.2299998E-01	+2.4758458E-01
144.0	5	+2.5877998E-01	+1.5547317E-02	+2.7939999E-01	+2.4009996E-01	+2.4670058E-01
150.0	6	+2.5286626E-01	+8.5281653E-03	+2.6129996E-01	+2.3679995E-01	+2.4621838E-01
166.0	6	+2.5461637E-01	+8.6673232E-03	+2.6639997E-01	+2.4499994E-01	+2.4493259E-01
176.0	2	+2.3839992E-01	+4.3835227E-03	+2.4149996E-01	+2.3529994E-01	+2.4412894E-01
179.0	4	+2.1544992E-01	+8.2339243E-03	+2.2479999E-01	+2.0619994E-01	+2.4388784E-01
191.0	6	+2.3673307E-01	+3.9309509E-03	+2.4039995E-01	+2.3039996E-01	+2.4292349E-01
202.0	6	+2.4299967E-01	+2.1404351E-02	+2.7799999E-01	+2.1999996E-01	+2.4203950E-01
216.0	6	+2.3019981E-01	+8.8325066E-03	+2.4159997E-01	+2.2359997E-01	+2.4091440E-01
230.0	6	+2.2611647E-01	+4.5076535E-03	+2.3309999E-01	+2.1919995E-01	+2.3978930E-01
241.0	6	+2.2624969E-01	+1.5069687E-02	+2.4169999E-01	+2.0659995E-01	+2.3890531E-01
251.0	6	+2.5526648E-01	+6.2758793E-03	+2.6169997E-01	+2.4559998E-01	+2.3810166E-01
273.0	6	+2.5601637E-01	+2.0197754E-02	+2.7799999E-01	+2.3269999E-01	+2.3633366E-01
285.0	5	+2.3025989E-01	+7.2103843E-03	+2.3599994E-01	+2.1999996E-01	+2.3536926E-01

STAGE 1 DISSECTED MOTOR=0012199,LOW RATE CHS=2.0 IN/MIN,STRAIN MAX STRESS

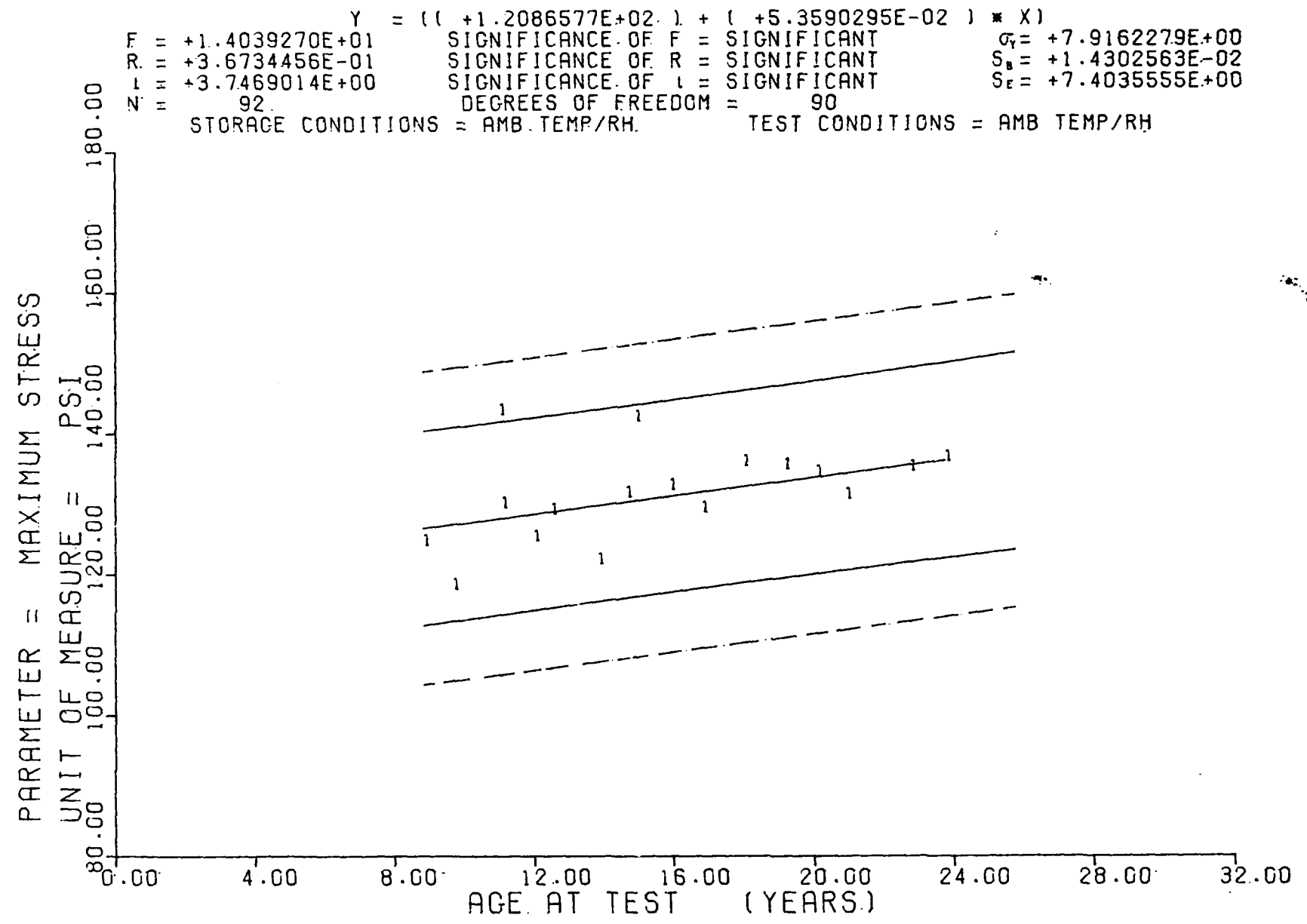

Y = ((+1.2086577E+02) + (+5.3590295E-02) * X)
F = +1.4039270E+01 SIGNIFICANCE OF F = SIGNIFICANT
R = +3.6734456E-01 SIGNIFICANCE OF R = SIGNIFICANT
t = +3.7469014E+00 SIGNIFICANCE OF t = SIGNIFICANT
N = 92 DEGREES OF FREEDOM = 90
STORAGE CONDITIONS = AMB.TEMP/RH. TEST CONDITIONS = AMB TEMP/RH
PARAMETER = MAXIMUM STRESS
UNIT OF MEASURE = PSI
80.00
100.00
120.00
140.00
160.00
180.00
0.00
4.00
8.00
12.00
16.00
20.00
24.00
28.00
32.00
AGE AT TEST (YEARS)
STAGE 1,DISSECTED MOTOR=0012199,LOW RATE CHS=2.0 IN/MIN,MAXIMUM STRESS.

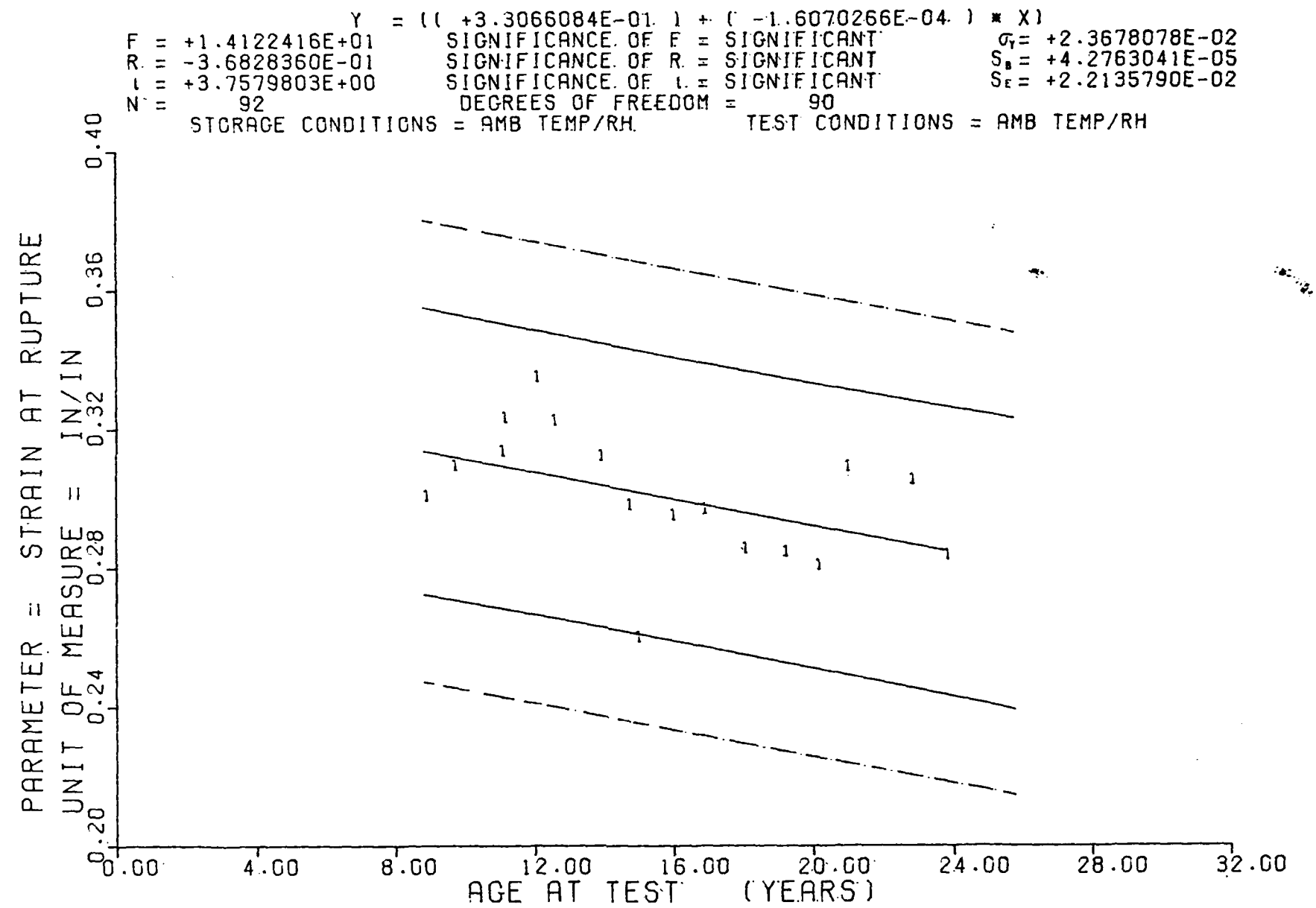
Figure 2

**** LINEAR REGRESSION ANALYSIS ****

*** ANALYSIS OF TIME SERIES ***

AGE (MONTHS)	SPECIMENS PER GROUP	MEAN Y	STANDARD DEVIATION	MAXIMUM Y	MINIMUM Y	REGRESSION Y
106.0	5	+1.2419999E+02	+4.7116875E+00	+1.2800000E+02	+1.1600000E+02	+1.2654634E+02
116.0	6	+1.1800000E+02	+1.2263767E+01	+1.3300000E+02	+1.0600000E+02	+1.2708224E+02
132.0	6	+1.4274658E+02	+1.6683770E+00	+1.4548999E+02	+1.4110998E+02	+1.2793968E+02
133.0	5	+1.2956991E+02	+5.7957792E+00	+1.3460998E+02	+1.1980999E+02	+1.2799327E+02
144.0	5	+1.2485189E+02	+4.5344989E-01	+1.2520999E+02	+1.2412998E+02	+1.2858276E+02
150.0	6	+1.2864660E+02	+2.5662774E+00	+1.3153999E+02	+1.2500000E+02	+1.2890431E+02
166.0	6	+1.2155325E+02	+2.7367871E+00	+1.2544999E+02	+1.1809999E+02	+1.2976176E+02
176.0	2	+1.3102990E+02	+2.8508955E+00	+1.3303999E+02	+1.2901998E+02	+1.3029765E+02
179.0	4	+1.4183489E+02	+3.2019358E+00	+1.4488999E+02	+1.3736999E+02	+1.3045843E+02
191.0	6	+1.3209822E+02	+3.0794404E+00	+1.3597999E+02	+1.2877999E+02	+1.3110151E+02
202.0	6	+1.2883328E+02	+6.3848843E+00	+1.3819999E+02	+1.2009999E+02	+1.3169100E+02
216.0	6	+1.3543655E+02	+2.8656616E+00	+1.3852999E+02	+1.3007998E+02	+1.3244126E+02
230.0	6	+1.3498823E+02	+2.6874509E+00	+1.4035998E+02	+1.3298999E+02	+1.3319154E+02
241.0	6	+1.3395153E+02	+4.5478053E+00	+1.4010998E+02	+1.2988999E+02	+1.3378103E+02
251.0	6	+1.3077160E+02	+3.5769172E+00	+1.3590998E+02	+1.2644999E+02	+1.3431694E+02
273.0	6	+1.3467324E+02	+5.9716953E+00	+1.4295999E+02	+1.2757998E+02	+1.3549592E+02
295.0	5	+1.3605395E+02	+5.2197111E+00	+1.4268998E+02	+1.3021998E+02	+1.3613900E+02

STAGE 1.DISSECTED MOTOR=0012199.LOW RATE CHS=2.0 IN/MIN.MAXIMUM STRESS.



STAGE 1 DISSECTED MOTOR=0012199,LOW RATE CHS=2.0 IN/MIN,STRAIN AT RUPTURE

Figure 3

**** LINEAR REGRESSION ANALYSIS ****

*** ANALYSIS OF TIME SERIES ***

AGE (MONTHS)	SPECIMENS PER GROUP	MEAN Y	STANDARD DEVIATION	MAXIMUM Y	MINIMUM Y	REGRESSION Y
106.0	5	+2.9939991E-01	+2.5598757E-02	+3.4299999E-01	+2.7799999E-01	+3.1362634E-01
116.0	6	+3.0816632E-01	+1.3563977E-02	+3.2599997E-01	+2.8499996E-01	+3.1201928E-01
132.0	6	+3.1233310E-01	+1.8473621E-02	+3.4899997E-01	+2.9919999E-01	+3.0944806E-01
133.0	5	+3.2195985E-01	+6.0889666E-03	+3.2649999E-01	+3.1279999E-01	+3.0928736E-01
144.0	5	+3.3369976E-01	+9.9597381E-03	+3.4749996E-01	+3.2119995E-01	+3.0751961E-01
150.0	6	+3.2109975E-01	+1.0774521E-02	+3.3299994E-01	+3.0759996E-01	+3.0655539E-01
166.0	6	+3.1094980E-01	+1.7397857E-02	+3.2719999E-01	+2.7859997E-01	+3.0398416E-01
176.0	2	+2.9684996E-01	+8.5544344E-03	+3.0289995E-01	+2.9079997E-01	+3.0237716E-01
179.0	4	+2.5877475E-01	+1.8677348E-02	+2.8229999E-01	+2.4259996E-01	+3.0189502E-01
191.0	6	+2.9393303E-01	+1.2977752E-02	+3.1169998E-01	+2.7379995E-01	+2.9996663E-01
202.0	6	+2.9566633E-01	+2.4892756E-02	+3.3799999E-01	+2.7199995E-01	+2.9819887E-01
216.0	6	+2.8433305E-01	+1.6114081E-02	+3.0379998E-01	+2.6209998E-01	+2.9594904E-01
230.0	6	+2.8339958E-01	+1.9483543E-02	+2.9599994E-01	+2.4399995E-01	+2.9369920E-01
241.0	6	+2.7943307E-01	+3.0900660E-02	+3.0799996E-01	+2.3599994E-01	+2.9193145E-01
251.0	6	+3.0781650E-01	+8.1155651E-03	+3.1719994E-01	+2.9509997E-01	+2.9032444E-01
273.0	6	+3.0398321E-01	+1.6719736E-02	+3.2529997E-01	+2.8199994E-01	+2.8678900E-01
285.0	5	+2.8223967E-01	+1.3611704E-02	+2.9529994E-01	+2.5929999E-01	+2.8486055E-01

STAGE 1 DISSECTED MOTOR=0012199,LOW RATE CHS=2.0 IN/MIN,STRAIN AT RUPTURE

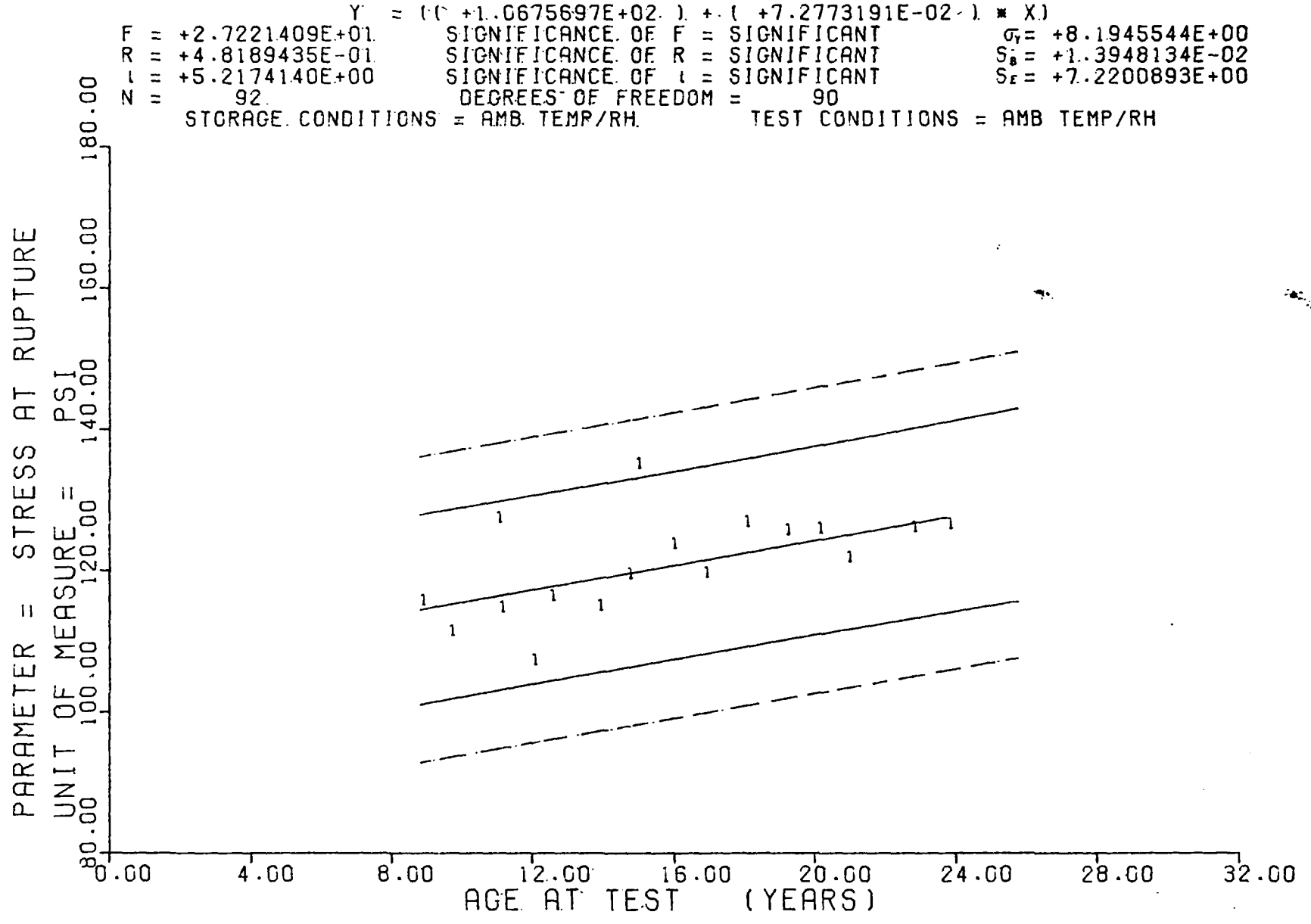

Y = ((+1.0675697E+02) + (+7.2773191E-02) * X)
F = +2.7221409E+01 SIGNIFICANCE OF F = SIGNIFICANT σY = +8.1945544E+00
R = +4.8189435E-01 SIGNIFICANCE OF R = SIGNIFICANT Sβ = +1.3948134E-02
ι = +5.2174140E+00 SIGNIFICANCE OF ι = SIGNIFICANT Sε = +7.2200893E+00
N = 92 DEGREES OF FREEDOM = 90
STORAGE CONDITIONS = AMB TEMP/RH TEST CONDITIONS = AMB TEMP/RH
PARAMETER = STRESS AT RUPTURE
UNIT OF MEASURE = PSI
80.00
100.00
120.00
140.00
160.00
180.00
0.00
4.00
8.00
12.00
16.00
20.00
24.00
28.00
32.00
AGE AT TEST (YEARS)
STAGE 1,DISSECTED MOTOR=0012199,LOW RATE CHS=2.0 IN/MIN,STRESS AT RUPTURE.

Figure 4

**** LINEAR REGRESSION ANALYSIS ****

*** ANALYSIS OF TIME SERIES ***

AGE (MONTHS)	SPECIMENS PER GROUP	MEAN Y	STANDARD DEVIATION	MAXIMUM Y	MINIMUM Y	REGRESSION Y
106.0	5	+1.1519999E+02	+7.0851958E+00	+1.2100000E+02	+1.0300000E+02	+1.1447093E+02
116.0	6	+1.1083332E+02	+8.7502380E+00	+1.2100000E+02	+1.0200000E+02	+1.1519866E+02
132.0	6	+1.2689155E+02	+2.7088992E+00	+1.3042999E+02	+1.2306999E+02	+1.1636303E+02
133.0	5	+1.1417396E+02	+7.4520280E+00	+1.1900000E+02	+1.0111999E+02	+1.1643580E+02
144.0	5	+1.0674594E+02	+3.3354907E+00	+1.1002999E+02	+1.0140998E+02	+1.1723631E+02
150.0	6	+1.1578491E+02	+4.4087927E+00	+1.2200000E+02	+1.0929998E+02	+1.1767294E+02
166.0	6	+1.1439656E+02	+3.8711615E+00	+1.2129998E+02	+1.1119999E+02	+1.1883732E+02
176.0	2	+1.1894499E+02	+1.7041970E+00	+1.2014999E+02	+1.1773999E+02	+1.1956504E+02
179.0	4	+1.3454992E+02	+5.1666022E+00	+1.4128999E+02	+1.2882998E+02	+1.1978337E+02
191.0	6	+1.2319155E+02	+4.4614784E+00	+1.2768998E+02	+1.1760998E+02	+1.2065664E+02
202.0	6	+1.1911653E+02	+6.5527391E+00	+1.2929998E+02	+1.0959999E+02	+1.2145715E+02
216.0	6	+1.2626826E+02	+3.7032192E+00	+1.3122999E+02	+1.2100000E+02	+1.2247598E+02
230.0	6	+1.2509658E+02	+1.9613287E+00	+1.2729998E+02	+1.2200000E+02	+1.2349481E+02
241.0	6	+1.2531823E+02	+6.5015212E+00	+1.3389999E+02	+1.1819999E+02	+1.2429530E+02
251.0	6	+1.2131489E+02	+2.4256621E+00	+1.2592999E+02	+1.1930999E+02	+1.2502304E+02
273.0	6	+1.2552493E+02	+5.4243812E+00	+1.3154998E+02	+1.1915998E+02	+1.2662405E+02
285.0	5	+1.2598793E+02	+5.2293178E+00	+1.3115998E+02	+1.1882998E+02	+1.2749732E+02

STAGE 1,DISSECTED MOTOR=0012199,LOW RATE CHS=2.0 IN/MIN.STRESS AT RUPTURE.

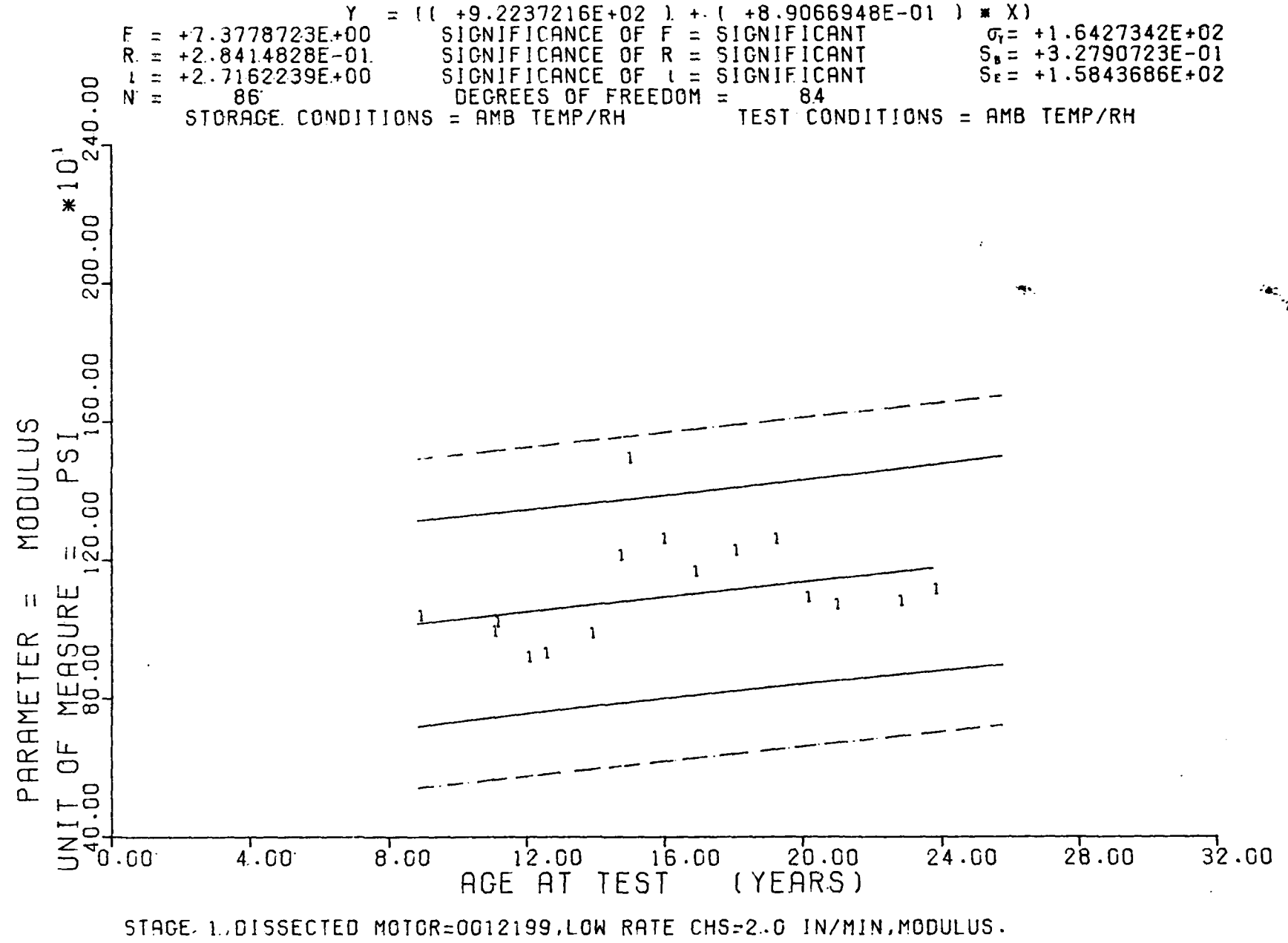

Y = ((+9.2237216E+02) + (+8.9066948E-01) * X)
F = +7.3778723E+00 SIGNIFICANCE OF F = SIGNIFICANT
R = +2.8414828E-01 SIGNIFICANCE OF R = SIGNIFICANT
t = +2.7162239E+00 SIGNIFICANCE OF t = SIGNIFICANT
N = 86 DEGREES OF FREEDOM = 84
STORAGE CONDITIONS = AMB TEMP/RH TEST CONDITIONS = AMB TEMP/RH
PARAMETER = MODULUS
UNIT OF MEASURE = PSI *10^1
40.00
80.00
120.00
160.00
200.00
240.00
0.00
4.00
8.00
12.00
16.00
20.00
24.00
28.00
32.00
AGE AT TEST (YEARS)
STAGE 1, DISSECTED MOTOR=0012199, LOW RATE CHS=2.0 IN/MIN, MODULUS.

figure 5

**** LINEAR REGRESSION ANALYSIS ****

*** ANALYSIS OF TIME SERIES ***

AGE (MONTHS)	SPECIMENS PER GROUP	MEAN Y	STANDARD DEVIATION	MAXIMUM Y	MINIMUM Y	REGRESSION Y
106.0	5	+1.0260000E+03	+1.0358571E+02	+1.1200000E+03	+8.5000000E+02	+1.0167829E+03
132.0	6	+9.8066650E+02	+1.2252292E+02	+1.1430000E+03	+8.1700000E+02	+1.0399404E+03
133.0	5	+1.0085998E+03	+1.1083456E+02	+1.1550000E+03	+8.7000000E+02	+1.0408310E+03
144.0	5	+9.0659985E+02	+5.1940350E+01	+9.8400000E+02	+8.5400000E+02	+1.0506284E+03
150.0	6	+9.1816650E+02	+9.0903061E+01	+1.1000000E+03	+8.5800000E+02	+1.0559724E+03
166.0	6	+9.7550000E+02	+4.5443371E+01	+1.0620000E+03	+9.3700000E+02	+1.0702231E+03
176.0	2	+1.2010000E+03	+1.4990663E+02	+1.3070000E+03	+1.0950000E+03	+1.0791298E+03
179.0	4	+1.4822500E+03	+4.8506872E+01	+1.5490000E+03	+1.4330000E+03	+1.0818020E+03
191.0	6	+1.2486665E+03	+3.9072582E+01	+1.2950000E+03	+1.2030000E+03	+1.0924899E+03
202.0	6	+1.1543332E+03	+1.6502444E+02	+1.3590000E+03	+9.3800000E+02	+1.1022873E+03
216.0	6	+1.2155000E+03	+5.7719147E+01	+1.2660000E+03	+1.1240000E+03	+1.1147565E+03
230.0	6	+1.2476665E+03	+3.3037352E+01	+1.3110000E+03	+1.2190000E+03	+1.1272260E+03
241.0	6	+1.0790000E+03	+1.5707705E+02	+1.3060000E+03	+9.5500000E+02	+1.1370234E+03
251.0	6	+1.0576665E+03	+9.0515560E+01	+1.1970000E+03	+9.4700000E+02	+1.1459301E+03
273.0	6	+1.0678332E+03	+1.0091465E+02	+1.2120000E+03	+9.4700000E+02	+1.1655249E+03
285.0	5	+1.1017998E+03	+9.5535767E+01	+1.2210000E+03	+1.0200000E+03	+1.1762128E+03

STAGE 1,DISSECTED MOTOR=0012199,LOW RATE CHS=2.0 IN/MIN,MODULUS.

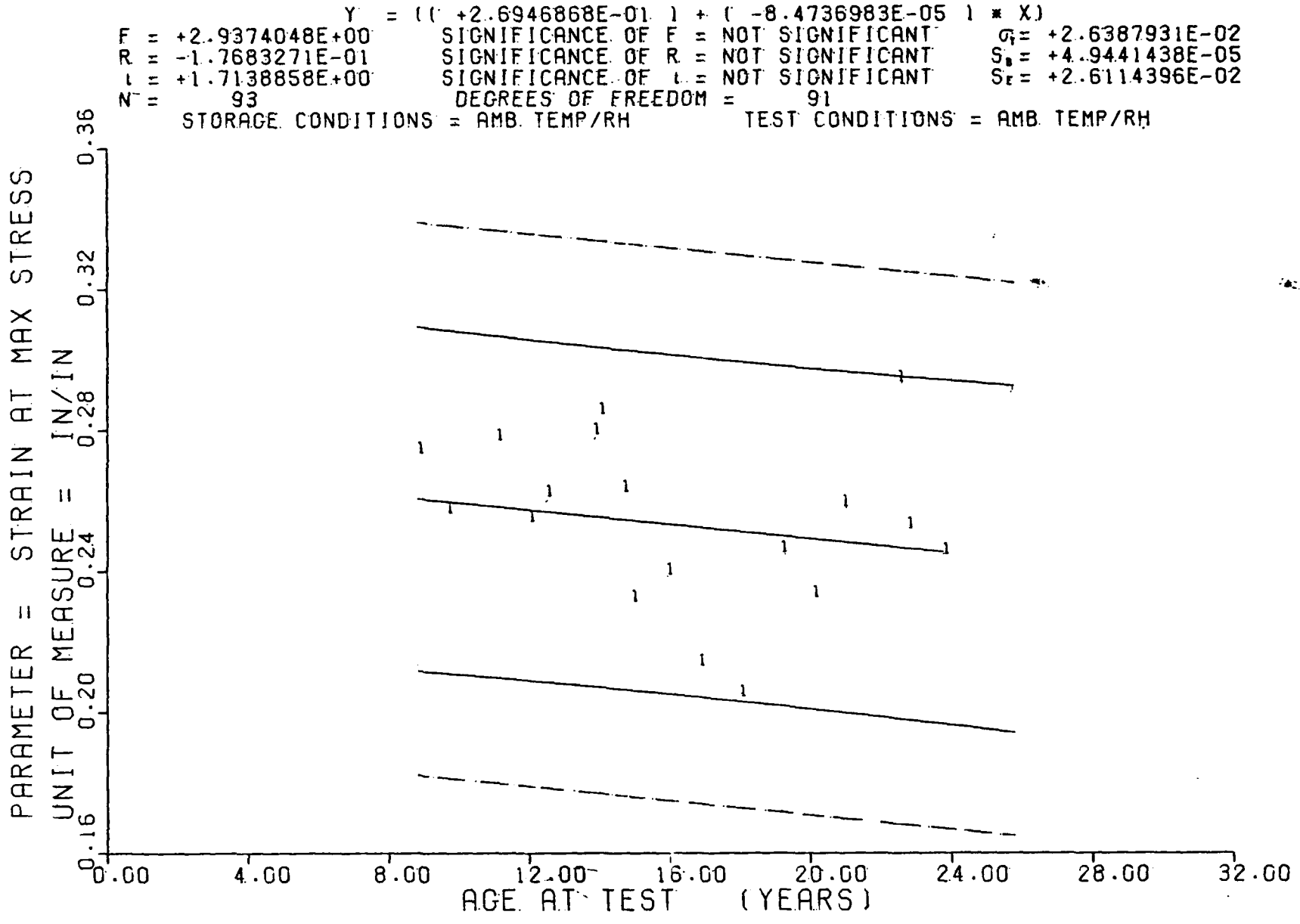

Y = ((+2.6946868E-01) + (-8.4736983E-05) * X)
F = +2.9374048E+00 SIGNIFICANCE OF F = NOT SIGNIFICANT σ = +2.6387931E-02
R = -1.7683271E-01 SIGNIFICANCE OF R = NOT SIGNIFICANT S_B = +4.9441438E-05
t = +1.7138858E+00 SIGNIFICANCE OF t = NOT SIGNIFICANT S_E = +2.6114396E-02
N = 93 DEGREES OF FREEDOM = 91
STORAGE CONDITIONS = AMB TEMP/RH TEST CONDITIONS = AMB TEMP/RH
PARAMETER = STRAIN AT MAX STRESS
UNIT OF MEASURE = IN/IN
0.16
0.20
0.24
0.28
0.32
0.36
0.00
4.00
8.00
12.00
16.00
20.00
24.00
28.00
32.00
AGE AT TEST (YEARS)
STAGE 1 DISSECTED MOTOR=0012199,LOW RATE CHS=20.0 IN/MIN,STRAIN MAX STRESS

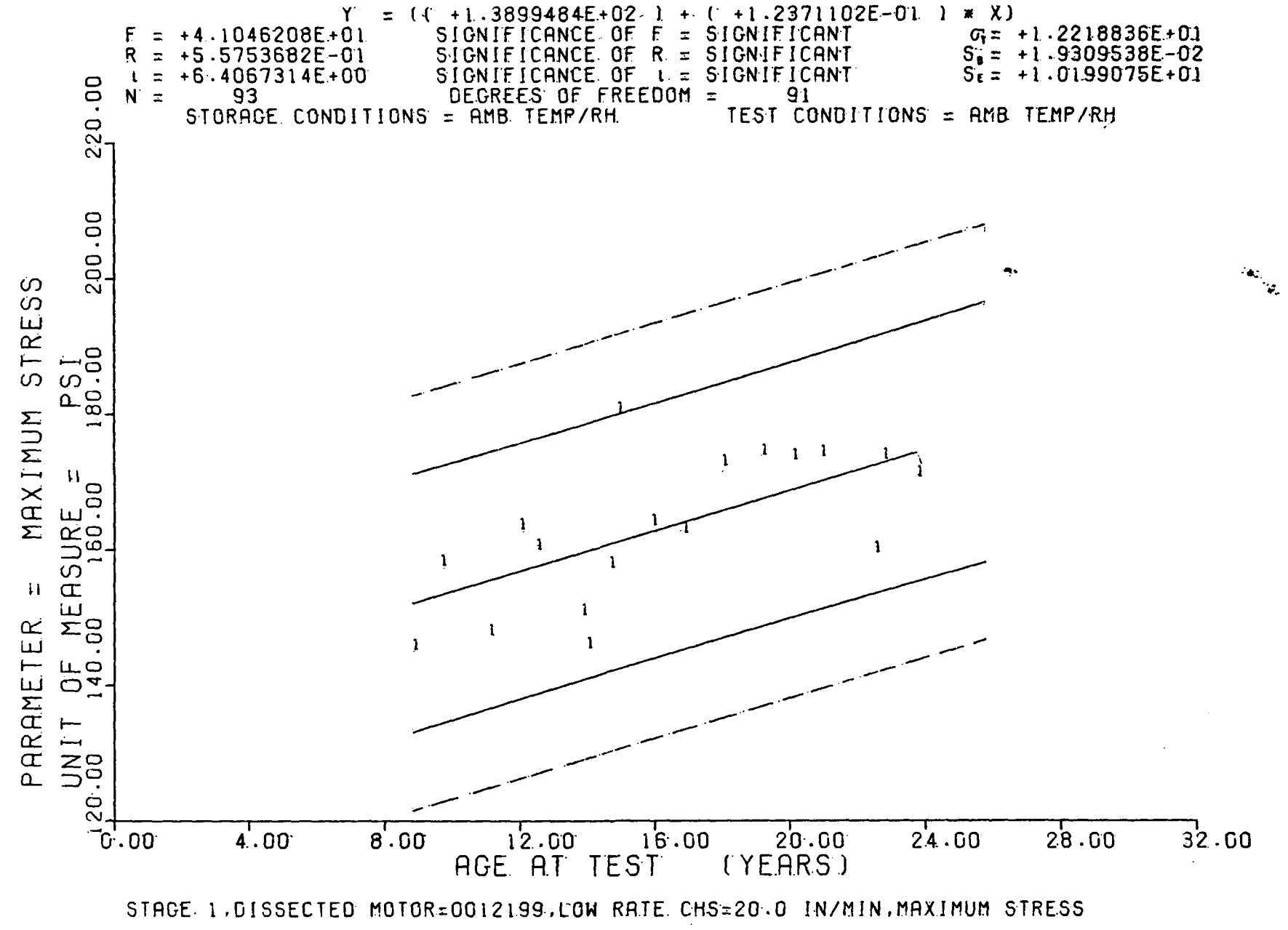
Figure 6

**** LINEAR REGRESSION ANALYSIS ****

*** ANALYSIS OF TIME SERIES ***

AGE (MONTHS)	SPECIMENS PER GROUP	MEAN Y	STANDARD DEVIATION	MAXIMUM Y	MINIMUM Y	REGRESSION Y
106.0	5	+2.7359980E-01	+1.0435076E-02	+2.8399997E-01	+2.5999999E-01	+2.6048654E-01
116.0	5	+2.5659978E-01	+1.3431138E-02	+2.7999997E-01	+2.4899995E-01	+2.5963914E-01
133.0	6	+2.7721643E-01	+1.0483412E-02	+2.9299998E-01	+2.6429998E-01	+2.5819861E-01
144.0	4	+2.5424981E-01	+2.0436458E-02	+2.8099995E-01	+2.3199999E-01	+2.5726652E-01
150.0	6	+2.6133298E-01	+1.5636114E-02	+2.7699995E-01	+2.3709994E-01	+2.5675809E-01
166.0	5	+2.7895981E-01	+4.8522512E-03	+2.8429996E-01	+2.7229994E-01	+2.5540232E-01
168.0	3	+2.8466659E-01	+1.5947957E-02	+3.0299997E-01	+2.7399998E-01	+2.5523287E-01
176.0	3	+2.6269996E-01	+8.6006440E-03	+2.7239996E-01	+2.5599998E-01	+2.5455492E-01
179.0	5	+2.3163986E-01	+3.2674051E-03	+2.3469996E-01	+2.2699999E-01	+2.5430071E-01
191.0	6	+2.3916655E-01	+1.9145622E-02	+2.5329995E-01	+2.0669996E-01	+2.5328391E-01
202.0	6	+2.1333312E-01	+2.3176466E-02	+2.4399995E-01	+1.9299995E-01	+2.5235176E-01
216.0	6	+2.0468312E-01	+1.0245927E-02	+2.2129994E-01	+1.9449996E-01	+2.5116544E-01
230.0	6	+2.4548321E-01	+1.4505469E-02	+2.7299994E-01	+2.3299998E-01	+2.4997913E-01
241.0	3	+2.3269993E-01	+4.5106245E-03	+2.3789995E-01	+2.2979998E-01	+2.4904704E-01
251.0	6	+2.5843316E-01	+6.8149525E-03	+2.7099996E-01	+2.5199997E-01	+2.4819970E-01
270.0	6	+2.5384958E-01	+7.4745643E-03	+3.0199998E-01	+2.8399997E-01	+2.4658966E-01
273.0	6	+2.5214970E-01	+7.8207324E-03	+2.5949996E-01	+2.4189996E-01	+2.4633544E-01
285.0	6	+2.4478304E-01	+7.8295147E-03	+2.5089997E-01	+2.2959995E-01	+2.4531859E-01

STAGE 1 DISSECTED MOTOR=0012199,LOW RATE CHS=20.0 IN/MIN,STRAIN MAX STRESS



STAGE 1,DISSECTED MOTOR=0012199,LOW RATE CHS=20.0 IN/MIN,MAXIMUM STRESS

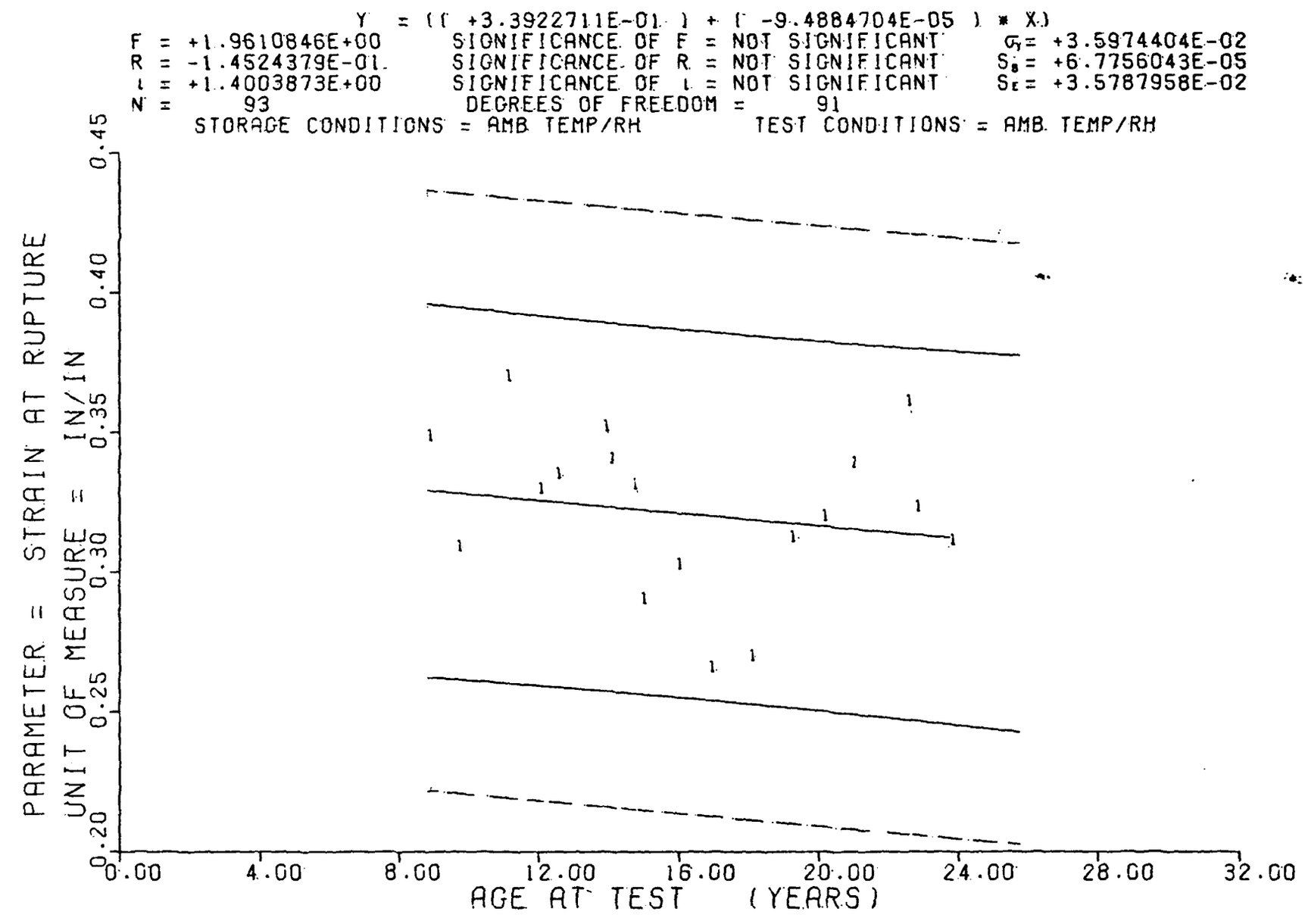
Figure 7

**** LINEAR REGRESSION ANALYSIS ****

*** ANALYSIS OF TIME SERIES ***

AGE (MONTHS)	SPECIMENS PER GROUP	MEAN Y	STANDARD DEVIATION	MAXIMUM Y	MINIMUM Y	REGRESSION Y
106.0	5	+1.4539999E+02	+1.1401754E+00	+1.4700000E+02	+1.4400000E+02	+1.5210821E+02
116.0	5	+1.5779998E+02	+5.8906705E+00	+1.6300000E+02	+1.5000000E+02	+1.5334532E+02
133.0	6	+1.4751496E+02	+1.9607369E+01	+1.6710998E+02	+1.2800000E+02	+1.5544841E+02
144.0	4	+1.6316491E+02	+9.0004990E+00	+1.7140998E+02	+1.5039999E+02	+1.5680923E+02
150.0	6	+1.6015657E+02	+5.6862185E+00	+1.6895999E+02	+1.5562998E+02	+1.5755149E+02
166.0	5	+1.5049194E+02	+2.7810708E+00	+1.5372999E+02	+1.4684999E+02	+1.5953086E+02
168.0	3	+1.4558992E+02	+1.5274839E+00	+1.4714999E+02	+1.4411999E+02	+1.5977828E+02
176.0	3	+1.5740322E+02	+2.7589509E+00	+1.6057998E+02	+1.5564999E+02	+1.6076799E+02
179.0	5	+1.8026391E+02	+2.9412120E+00	+1.8273999E+02	+1.7536999E+02	+1.6113911E+02
191.0	6	+1.6368989E+02	+7.0419943E+00	+1.7081999E+02	+1.5643998E+02	+1.6262364E+02
202.0	6	+1.6256652E+02	+1.0914950E+01	+1.7309999E+02	+1.4859999E+02	+1.6398446E+02
216.0	6	+1.7243659E+02	+2.8245854E+00	+1.7589999E+02	+1.6795999E+02	+1.6571643E+02
230.0	6	+1.7400825E+02	+5.2773576E+00	+1.8154998E+02	+1.6819999E+02	+1.6744837E+02
241.0	3	+1.7332656E+02	+5.9083106E+00	+1.7707998E+02	+1.6651998E+02	+1.6880920E+02
251.0	6	+1.7379988E+02	+3.7174619E+00	+1.7704998E+02	+1.6800000E+02	+1.7004631E+02
270.0	6	+1.5967483E+02	+1.6378352E+00	+1.6273999E+02	+1.5826998E+02	+1.7239682E+02
273.0	6	+1.7336494E+02	+4.6179674E+00	+1.8198999E+02	+1.7025000E+02	+1.7276795E+02
285.0	6	+1.7077656E+02	+4.6848658E+00	+1.7605999E+02	+1.6593998E+02	+1.7425248E+02

STAGE 1.DISSECTED MOTOR=0012199,LOW RATE CHS=20.0 IN/MIN.MAXIMUM STRESS



STAGE 1 DISSECTED MOTOR=0012199,LOW RATE CHS=20.0 IN/MIN,STRAIN AT RUPTURE

Figure 3

**** LINEAR REGRESSION ANALYSIS ****

*** ANALYSIS OF TIME SERIES ***

AGE (MONTHS)	SPECIMENS PER GROUP	MEAN Y	STANDARD DEVIATION	MAXIMUM Y	MINIMUM Y	REGRESSION Y
106.0	5	+3.4716961E-01	+2.0295265E-02	+3.6799997E-01	+3.1500008E-01	+3.2916933E-01
116.0	5	+3.0759978E-01	+1.7688302E-02	+3.3299994E-01	+2.8299999E-01	+3.2822048E-01
133.0	6	+3.6869955E-01	+1.5290729E-02	+3.9699995E-01	+3.5549998E-01	+3.2660740E-01
144.0	4	+3.2827472E-01	+3.4613049E-02	+3.7199997E-01	+2.9869997E-01	+3.2556366E-01
150.0	6	+3.3358299E-01	+2.2431920E-02	+3.6099994E-01	+2.9899996E-01	+3.2499438E-01
166.0	5	+3.5083961E-01	+3.6958573E-03	+3.5659998E-01	+3.4729999E-01	+3.2347625E-01
168.0	3	+3.3899974E-01	+1.7326479E-02	+3.5899996E-01	+3.2899999E-01	+3.2328647E-01
176.0	3	+3.2986658E-01	+4.3023919E-03	+3.3239996E-01	+3.2489997E-01	+3.2252734E-01
179.0	5	+2.8893983E-01	+9.4803047E-03	+2.9809999E-01	+2.7589994E-01	+3.2224273E-01
191.0	6	+3.0148315E-01	+4.6835616E-02	+3.4329998E-01	+2.1779996E-01	+3.2110410E-01
202.0	6	+2.6449966E-01	+3.0299714E-02	+3.0299997E-01	+2.2799998E-01	+3.2006037E-01
216.0	6	+2.6849985E-01	+9.7274283E-03	+2.7909994E-01	+2.5399994E-01	+3.1873196E-01
230.0	6	+3.1103324E-01	+3.7522664E-02	+3.5099995E-01	+2.5019997E-01	+3.1740361E-01
241.0	3	+3.1833326E-01	+1.5501815E-02	+3.3599996E-01	+3.0699998E-01	+3.1635987E-01
251.0	6	+3.3744955E-01	+8.1735012E-03	+3.4629994E-01	+3.2409995E-01	+3.1541103E-01
270.0	6	+3.5969984E-01	+4.2291681E-03	+3.6639994E-01	+3.5529994E-01	+3.1360822E-01
273.0	6	+3.2158305E-01	+1.2030453E-02	+3.3479994E-01	+3.0439996E-01	+3.1332355E-01
285.0	6	+3.0968314E-01	+2.5516440E-02	+3.3189994E-01	+2.6929998E-01	+3.1218492E-01

STAGE 1 DISSECTED MOTOR=0012199,LOW RATE CHS=20.0 IN/MIN,STRAIN AT RUPTURE

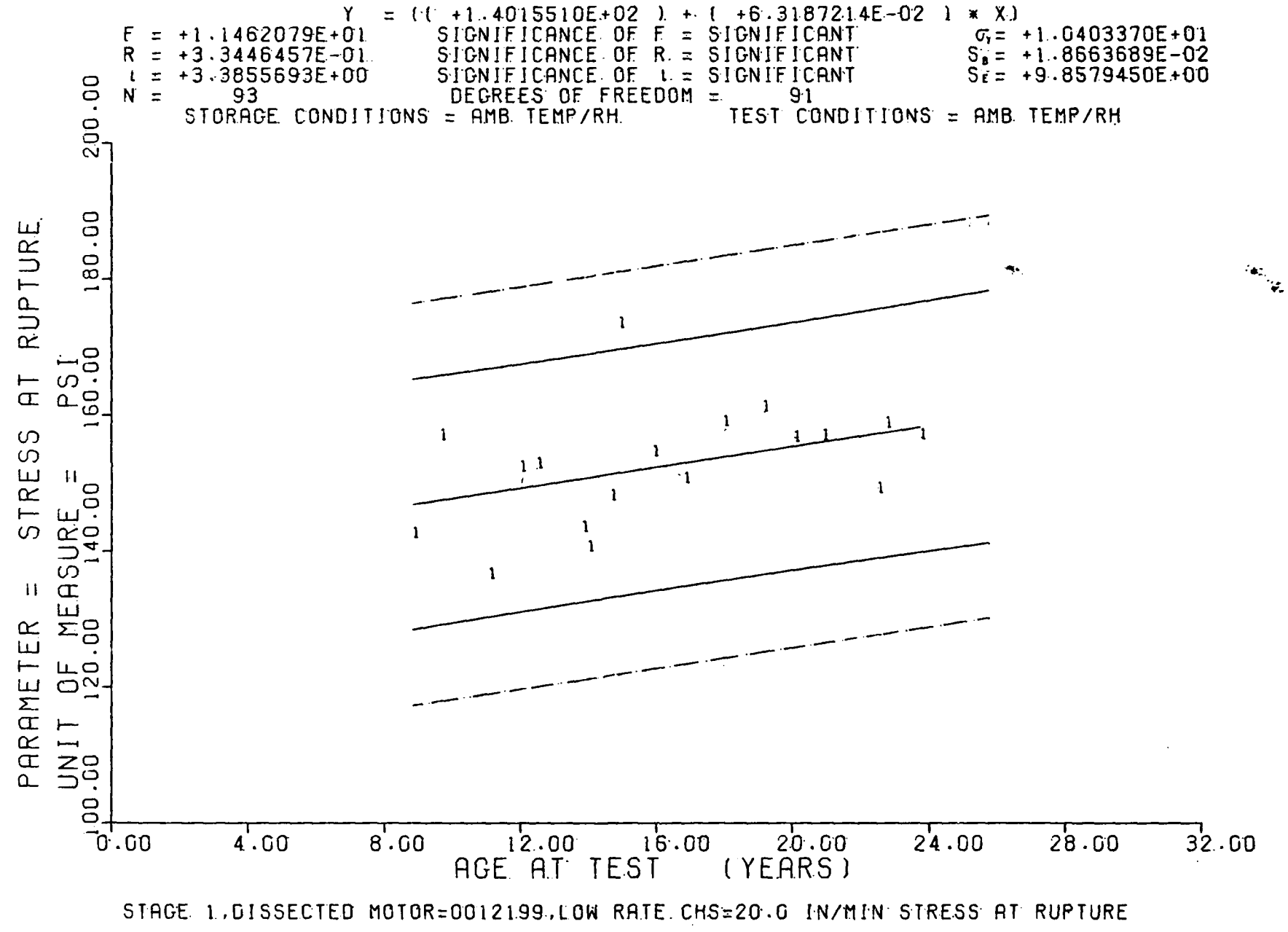

Y = ((+1.4015510E+02) + (+6.3187214E-02) * X)
F = +1.1462079E+01 SIGNIFICANCE OF F = SIGNIFICANT σ_Y = +1.0403370E+01
R = +3.3446457E-01 SIGNIFICANCE OF R = SIGNIFICANT S_B = +1.8663689E-02
t = +3.3855693E+00 SIGNIFICANCE OF t = SIGNIFICANT S_E = +9.8579450E+00
N = 93 DEGREES OF FREEDOM = 91
STORAGE CONDITIONS = AMB TEMP/RH TEST CONDITIONS = AMB TEMP/RH
PARAMETER = STRESS AT RUPTURE
UNIT OF MEASURE = PSI
100.00
120.00
140.00
160.00
180.00
200.00
0.00
4.00
8.00
12.00
16.00
20.00
24.00
28.00
32.00
AGE AT TEST (YEARS)
STAGE 1,DISSECTED MOTOR=0012199,LOW RATE CHS=20.0 IN/MIN STRESS AT RUPTURE

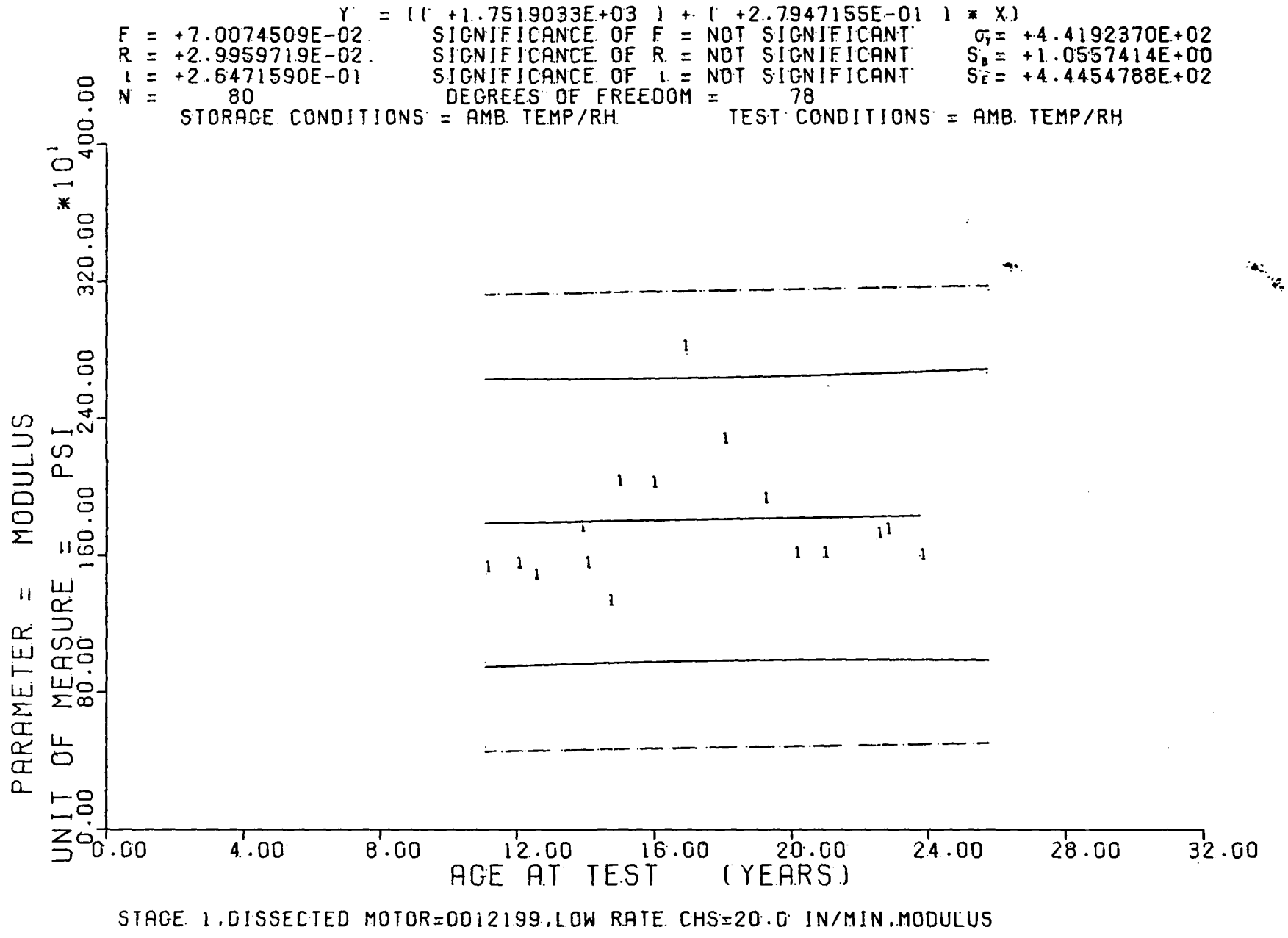
Figure 9

**** LINEAR REGRESSION ANALYSIS ****

*** ANALYSIS OF TIME SERIES ***

AGE (MONTHS)	SPECIMENS PER GROUP	MEAN Y	STANDARD DEVIATION	MAXIMUM Y	MINIMUM Y	REGRESSION Y
106.0	5	+1.4200000E+02	+7.0710678E-01	+1.4300000E+02	+1.4100000E+02	+1.4685293E+02
115.0	5	+1.5639999E+02	+6.5421708E+00	+1.6100000E+02	+1.4700000E+02	+1.4748481E+02
133.0	6	+1.3603662E+02	+1.3710224E+01	+1.4993998E+02	+1.2100000E+02	+1.4855899E+02
144.0	4	+1.5178485E+02	+9.7755807E+00	+1.6177999E+02	+1.4029998E+02	+1.4925405E+02
150.0	6	+1.5229158E+02	+5.1795425E+00	+1.6000000E+02	+1.4700000E+02	+1.4963317E+02
166.0	5	+1.4296391E+02	+3.9280589E+00	+1.4617999E+02	+1.3654998E+02	+1.5064416E+02
168.0	3	+1.4005989E+02	+1.6887985E+00	+1.4123999E+02	+1.3813999E+02	+1.5077055E+02
176.0	3	+1.4750325E+02	+3.4042401E+00	+1.5141999E+02	+1.4531999E+02	+1.5127604E+02
179.0	5	+1.7289788E+02	+3.9573571E+00	+1.7591999E+02	+1.6612998E+02	+1.5146560E+02
191.0	6	+1.5396321E+02	+1.0079369E+01	+1.6657998E+02	+1.4237998E+02	+1.5222384E+02
202.0	6	+1.5004988E+02	+1.1230562E+01	+1.6369999E+02	+1.3329998E+02	+1.5291891E+02
216.0	6	+1.5839489E+02	+3.1113100E+00	+1.6239999E+02	+1.5529998E+02	+1.5380352E+02
230.0	6	+1.6058325E+02	+6.1632402E+00	+1.6679998E+02	+1.4919999E+02	+1.5468815E+02
241.0	3	+1.5514656E+02	+6.8852199E+00	+1.6013999E+02	+1.4819999E+02	+1.5538320E+02
251.0	6	+1.5637319E+02	+4.0346214E+00	+1.6236999E+02	+1.5116999E+02	+1.5601509E+02
270.0	6	+1.4858157E+02	+1.6928074E+00	+1.5017999E+02	+1.4563999E+02	+1.5721563E+02
273.0	6	+1.5820820E+02	+4.2005079E+00	+1.6331999E+02	+1.5235998E+02	+1.5740519E+02
285.0	6	+1.5646997E+02	+5.0102816E+00	+1.6265998E+02	+1.4877999E+02	+1.5816345E+02

STAGE 1.DISSECTED MOTOR=0012199.LOW RATE CHS=20.0 IN/MIN STRESS AT RUPTURE



STAGE 1,DISSECTED MOTOR=0012199,LOW RATE CHS=20.0 IN/MIN,MODULUS

Figure 10

**** LINEAR REGRESSION ANALYSIS ****

*** ANALYSIS OF TIME SERIES ***

AGE (MONTHS)	SPECIMENS PER GROUP	MEAN Y	STANDARD DEVIATION	MAXIMUM Y	MINIMUM Y	REGRESSION Y
133.0	3	+1.5073332E+03	+1.8889503E+02	+1.6320000E+03	+1.2900000E+03	+1.7890729E+03
144.0	4	+1.5297500E+03	+8.7640839E+01	+1.6420000E+03	+1.4430000E+03	+1.7921472E+03
150.0	6	+1.4626665E+03	+2.2715251E+02	+1.7020000E+03	+1.0530000E+03	+1.7938239E+03
166.0	5	+1.7443999E+03	+5.7112170E+01	+1.8230000E+03	+1.6820000E+03	+1.7982956E+03
169.0	3	+1.5330000E+03	+4.1302905E+02	+1.9650000E+03	+1.1420000E+03	+1.7988544E+03
176.0	3	+1.3110000E+03	+1.9974984E+01	+1.3280000E+03	+1.2890000E+03	+1.8010903E+03
179.0	5	+2.0093999E+03	+1.9632001E+02	+2.2370000E+03	+1.7270000E+03	+1.8019287E+03
191.0	6	+2.0003332E+03	+3.8665316E+02	+2.4720000E+03	+1.4550000E+03	+1.8052822E+03
202.0	6	+2.7971665E+03	+5.2404576E+02	+3.1880000E+03	+2.0400000E+03	+1.8083564E+03
216.0	6	+2.2563332E+03	+5.1902665E+02	+2.7560000E+03	+1.2810000E+03	+1.8122690E+03
230.0	6	+1.9075000E+03	+1.3591063E+02	+2.0450000E+03	+1.7050000E+03	+1.8161816E+03
241.0	3	+1.5980000E+03	+1.4452710E+02	+1.6720000E+03	+1.4210000E+03	+1.8192558E+03
251.0	6	+1.5900000E+03	+1.5745348E+02	+1.8800000E+03	+1.4230000E+03	+1.8220505E+03
270.0	6	+1.7058332E+03	+1.0999257E+02	+1.8650000E+03	+1.5840000E+03	+1.8273605E+03
273.0	6	+1.7278332E+03	+7.9377368E+01	+1.8670000E+03	+1.6430000E+03	+1.8281989E+03
285.0	6	+1.5788332E+03	+1.0733576E+02	+1.7190000E+03	+1.4330000E+03	+1.8315527E+03

STAGE 1,DISSECTED MOTOR=0012199,LOW RATE CHS=20.0 IN/MIN,MODULUS

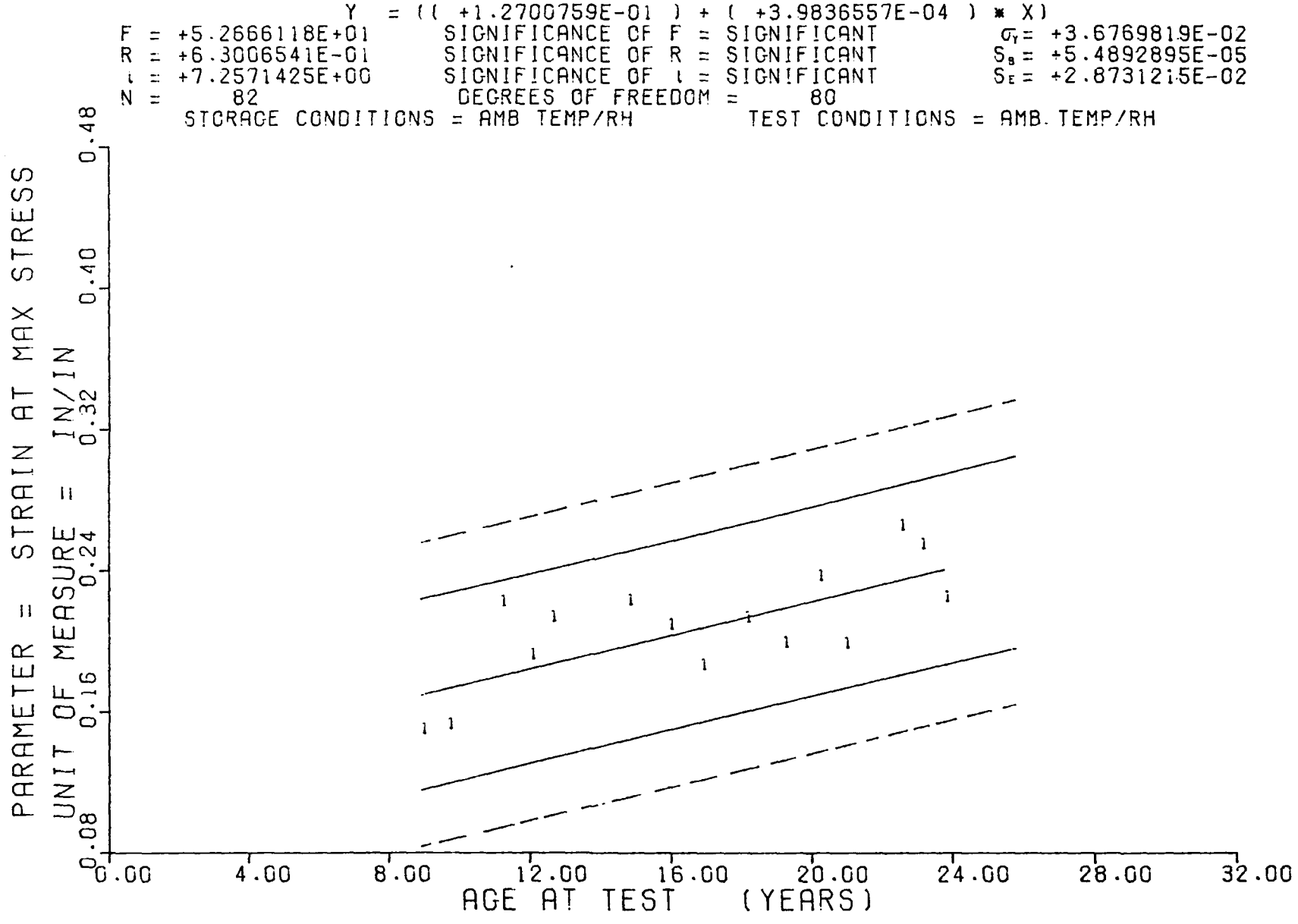

Y = ((+1.2700759E-01) + (+3.9836557E-04) * X)
F = +5.2666118E+01 SIGNIFICANCE OF F = SIGNIFICANT σY = +3.6769819E-02
R = +6.3006541E-01 SIGNIFICANCE OF R = SIGNIFICANT SB = +5.4892895E-05
t = +7.2571425E+00 SIGNIFICANCE OF t = SIGNIFICANT SE = +2.8731215E-02
N = 82 DEGREES OF FREEDOM = 80
STORAGE CONDITIONS = AMB TEMP/RH TEST CONDITIONS = AMB. TEMP/RH
PARAMETER = STRAIN AT MAX STRESS
UNIT OF MEASURE = IN/IN
0.08
0.16
0.24
0.32
0.40
0.48
0.00
4.00
8.00
12.00
16.00
20.00
24.00
28.00
32.00
AGE AT TEST (YEARS)
STAGE 1,DISSECTED MOTOR=0012199,HIGH RATE CHS=1750 IN/MIN,STRAIN MAX STRESS.

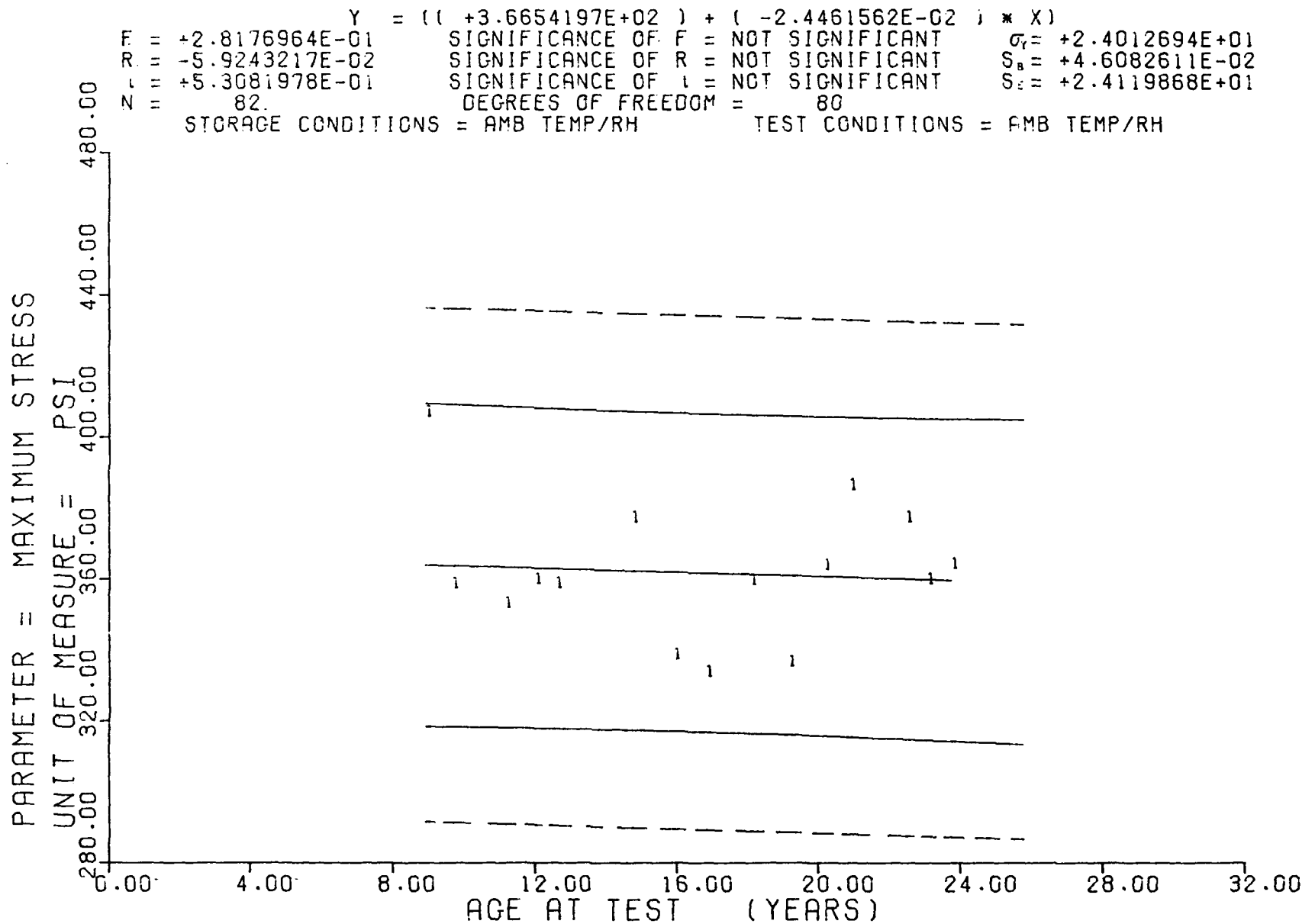
Figure 11

**** LINEAR REGRESSION ANALYSIS ****

*** ANALYSIS OF TIME SERIES ***

AGE (MONTHS)	SPECIMENS PER GROUP	MEAN Y	STANDARD DEVIATION	MAXIMUM Y	MINIMUM Y	REGRESSION Y
107.0	5	+1.4759993E-01	+1.3145107E-02	+1.6199994E-01	+1.3399994E-01	+1.6963267E-01
116.0	6	+1.5049993E-01	+3.3351092E-02	+1.9599997E-01	+1.0499995E-01	+1.7321795E-01
134.0	4	+2.2007495E-01	+4.2939157E-03	+2.2319996E-01	+2.1409994E-01	+1.8038856E-01
144.0	5	+1.8997997E-01	+2.0181864E-02	+2.1459996E-01	+1.6019999E-01	+1.8437218E-01
151.0	5	+2.1135973E-01	+1.0450773E-02	+2.2559994E-01	+1.9729995E-01	+1.8716078E-01
177.0	6	+2.2083312E-01	+9.7075748E-03	+2.3799997E-01	+2.0999997E-01	+1.9751828E-01
191.0	5	+2.0693987E-01	+3.6089004E-02	+2.4839997E-01	+1.5759998E-01	+2.0309537E-01
202.0	6	+1.8431563E-01	+1.7907310E-02	+2.0139998E-01	+1.5649998E-01	+2.0747739E-01
217.0	5	+2.1091991E-01	+8.6918641E-03	+2.2169995E-01	+2.0389997E-01	+2.1345287E-01
230.0	5	+1.9689995E-01	+6.8038571E-03	+2.0349997E-01	+1.8799996E-01	+2.1863162E-01
242.0	6	+2.3463308E-01	+2.7743720E-02	+2.6579999E-01	+1.9159996E-01	+2.2341203E-01
251.0	6	+1.9644987E-01	+5.3150602E-03	+2.0199996E-01	+1.8899995E-01	+2.2699731E-01
270.0	6	+2.6309978E-01	+3.5706953E-02	+3.0929994E-01	+2.2219997E-01	+2.3456627E-01
277.0	6	+2.5261640E-01	+1.4936898E-02	+2.7509999E-01	+2.3239994E-01	+2.3735481E-01
285.0	6	+2.2271645E-01	+1.7306787E-03	+2.2589999E-01	+2.2079998E-01	+2.4054175E-01

STAGE I,DISSECTED MOTOR=0012199,HIGH RATE CHS=1750 IN/MIN,STRAIN MAX STRESS.



STAGE 1,DISSECTED MOTOR=0012199,HIGH RATE CHS=1750 IN/MIN,MAXIMUM STRESS.

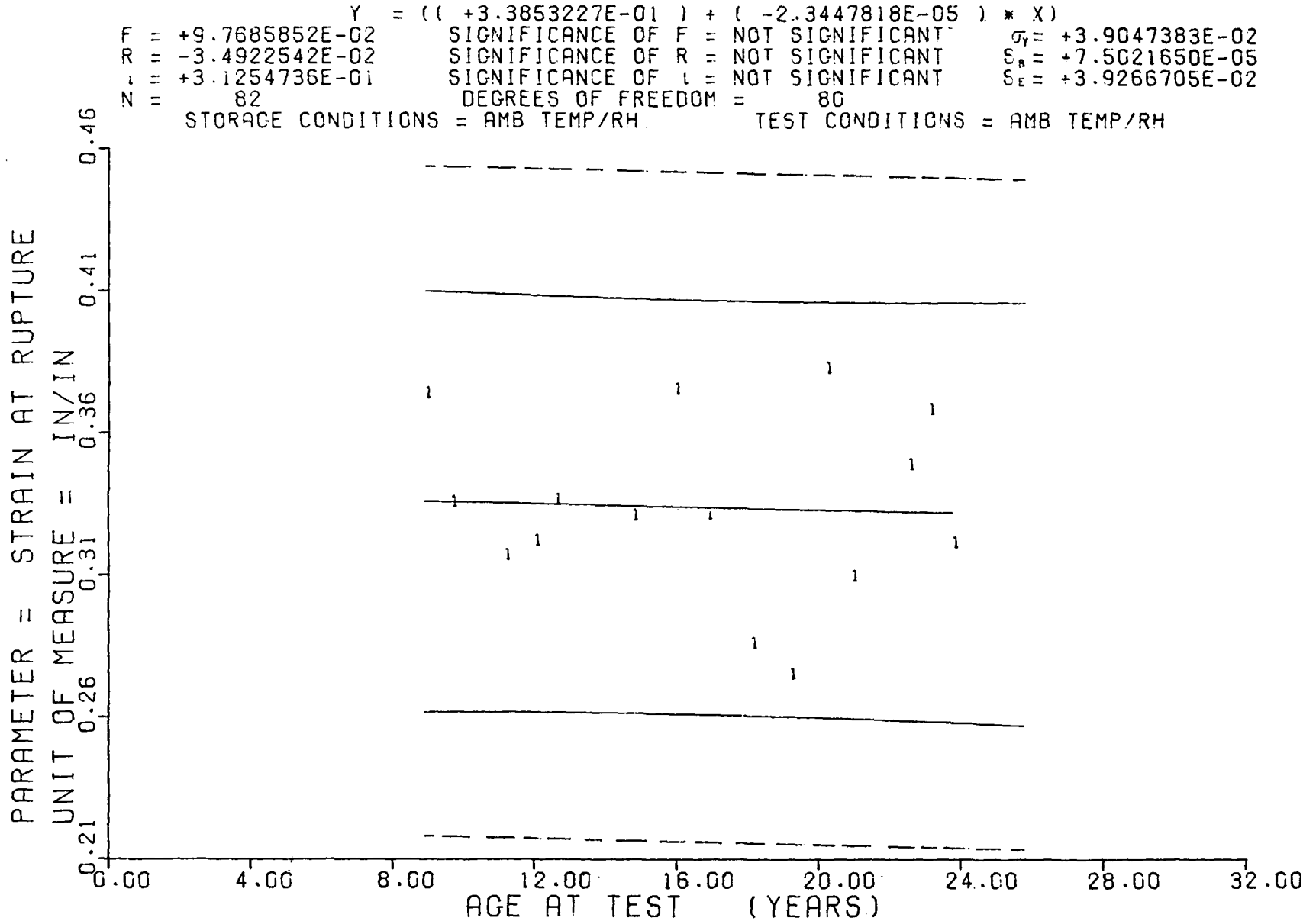
Figure 12

**** LINEAR REGRESSION ANALYSIS ****

*** ANALYSIS OF TIME SERIES ***

AGE (MONTHS)	SPECIMENS PER GROUP	MEAN Y	STANDARD DEVIATION	MAXIMUM Y	MINIMUM Y	REGRESSION Y
107.0	5	+4.0600000E+02	+8.2158383E+00	+4.2000000E+02	+4.0000000E+02	+3.6392456E+02
116.0	6	+3.5750000E+02	+6.1237243E+00	+3.7000000E+02	+3.5500000E+02	+3.6370434E+02
134.0	4	+3.5197729E+02	+1.1913723E+01	+3.6982983E+02	+3.4551977E+02	+3.6326391E+02
144.0	5	+3.5878588E+02	+1.8505524E+01	+3.8692993E+02	+3.3694995E+02	+3.6301928E+02
151.0	5	+3.5750390E+02	+8.9630851E+00	+3.7012988E+02	+3.4733984E+02	+3.6284814E+02
177.0	6	+3.7609814E+02	+1.9800236E+01	+4.0364990E+02	+3.5144995E+02	+3.6221215E+02
191.0	5	+3.3750781E+02	+3.2679392E+00	+3.4128979E+02	+3.3345996E+02	+3.6186962E+02
202.0	6	+3.3266479E+02	+3.4120061E+01	+3.6627978E+02	+2.9976977E+02	+3.6160058E+02
217.0	5	+3.5852368E+02	+2.1591822E+00	+3.6157983E+02	+3.5661987E+02	+3.6123364E+02
230.0	5	+3.3550195E+02	+4.8301720E+00	+3.4126977E+02	+3.2923999E+02	+3.6091577E+02
242.0	6	+3.6271972E+02	+1.7689354E+01	+3.9661987E+02	+3.5057983E+02	+3.6062207E+02
251.0	6	+3.8516137E+02	+1.4333740E+01	+4.0954980E+02	+3.7025976E+02	+3.6040209E+02
270.0	6	+3.7613647E+02	+3.3068848E+01	+4.4319995E+02	+3.5916992E+02	+3.5993725E+02
277.0	6	+3.5869311E+02	+7.8575659E+00	+3.6642993E+02	+3.4916992E+02	+3.5976611E+02
295.0	6	+3.6302148E+02	+3.7695234E+00	+3.6682983E+02	+3.5637988E+02	+3.5957031E+02

STAGE 1.DISSECTED MOTOR=0012199.HIGH RATE CHS=1750 IN/MIN.MAXIMUM STRESS.



STAGE 1,DISSECTED MOTOR=0012199,HIGH RATE CHS=1750 IN/MIN,STRAIN AT RUPTURE.

Figure 13

**** LINEAR REGRESSION ANALYSIS ****

*** ANALYSIS OF TIME SERIES ***

AGE (MONTHS)	SPECIMENS PER GROUP	MEAN Y	STANDARD DEVIATION	MAXIMUM Y	MINIMUM Y	REGRESSION Y
107.0	5	+3.7259978E-01	+1.9337545E-02	+3.9399999E-01	+3.4299999E-01	+3.3602333E-01
116.0	6	+3.3416634E-01	+1.3724733E-02	+3.5699999E-01	+3.1799995E-01	+3.3581233E-01
134.0	4	+3.1557498E-01	+9.8067285E-03	+3.2389998E-01	+3.0489999E-01	+3.3539026E-01
144.0	5	+3.2057970E-01	+3.8389853E-02	+3.6219996E-01	+2.6959997E-01	+3.3515578E-01
151.0	5	+3.3499962E-01	+1.8821788E-02	+3.6099994E-01	+3.1099998E-01	+3.3499163E-01
177.0	6	+3.2949972E-01	+1.2189567E-02	+3.4879994E-01	+3.1519997E-01	+3.3438199E-01
191.0	5	+3.7401962E-01	+1.8145567E-02	+3.9229995E-01	+3.4649997E-01	+3.3405369E-01
202.0	6	+3.2999956E-01	+4.7064620E-02	+3.9599996E-01	+2.8399997E-01	+3.3379578E-01
217.0	5	+2.8459984E-01	+1.2097074E-02	+2.9899996E-01	+2.7099996E-01	+3.3344405E-01
230.0	5	+2.7379989E-01	+9.3660495E-03	+2.8299999E-01	+2.6099997E-01	+3.3313924E-01
242.0	6	+3.8133299E-01	+5.3763365E-02	+4.2099994E-01	+2.8899997E-01	+3.3285784E-01
251.0	6	+3.0816650E-01	+2.0431704E-02	+3.2999998E-01	+2.7699995E-01	+3.3264684E-01
270.0	6	+3.4738284E-01	+2.5707550E-02	+3.8279998E-01	+3.1439995E-01	+3.3220136E-01
277.0	6	+3.6683285E-01	+2.9706726E-02	+3.9989995E-01	+3.1439995E-01	+3.3203721E-01
285.0	6	+3.1991636E-01	+1.1925567E-02	+3.3319997E-01	+3.0449998E-01	+3.3184963E-01

STAGE 1,DISSECTED MOTOR=0012199,HIGH RATE CHS=1750 IN/MIN,STRAIN AT RUPTURE.

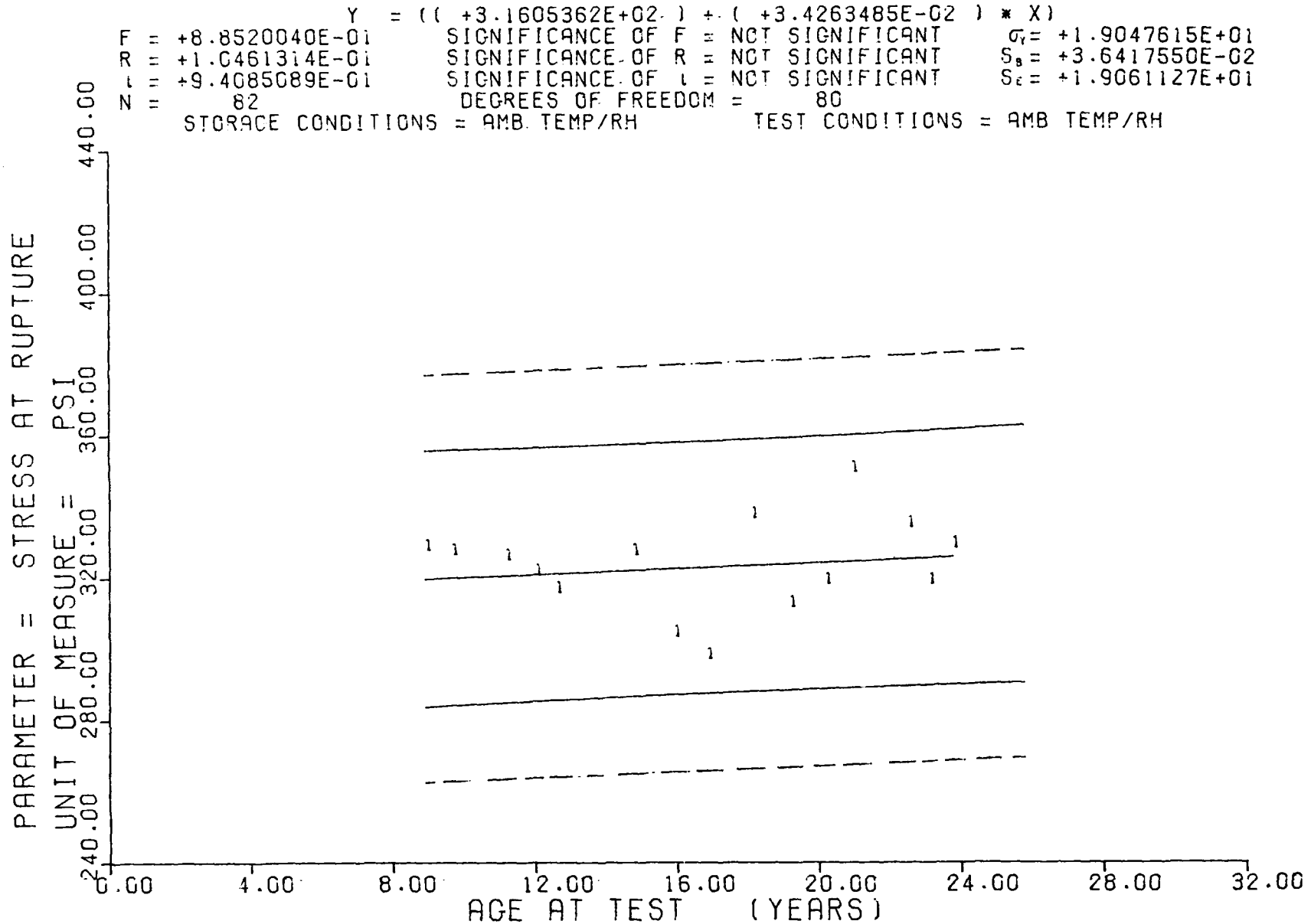

Y = ((+3.1605362E+02) + (+3.4263485E-02) * X)
F = +8.8520040E-01 SIGNIFICANCE OF F = NOT SIGNIFICANT σr = +1.9047615E+01
R = +1.0461314E-01 SIGNIFICANCE OF R = NOT SIGNIFICANT Sβ = +3.6417550E-02
ι = +9.4085089E-01 SIGNIFICANCE OF ι = NOT SIGNIFICANT Sε = +1.9061127E+01
N = 82 DEGREES OF FREEDOM = 80
STORAGE CONDITIONS = AMB TEMP/RH TEST CONDITIONS = AMB TEMP/RH
PARAMETER = STRESS AT RUPTURE
UNIT OF MEASURE = PSI
440.00
400.00
360.00
320.00
280.00
240.00
0.00
4.00
8.00
12.00
16.00
20.00
24.00
28.00
32.00
AGE AT TEST (YEARS)
STAGE 1,DISSECTED MOTOR=0012199,HIGH RATE CHS=1750 IN/MIN,STRESS AT RUPTURE.

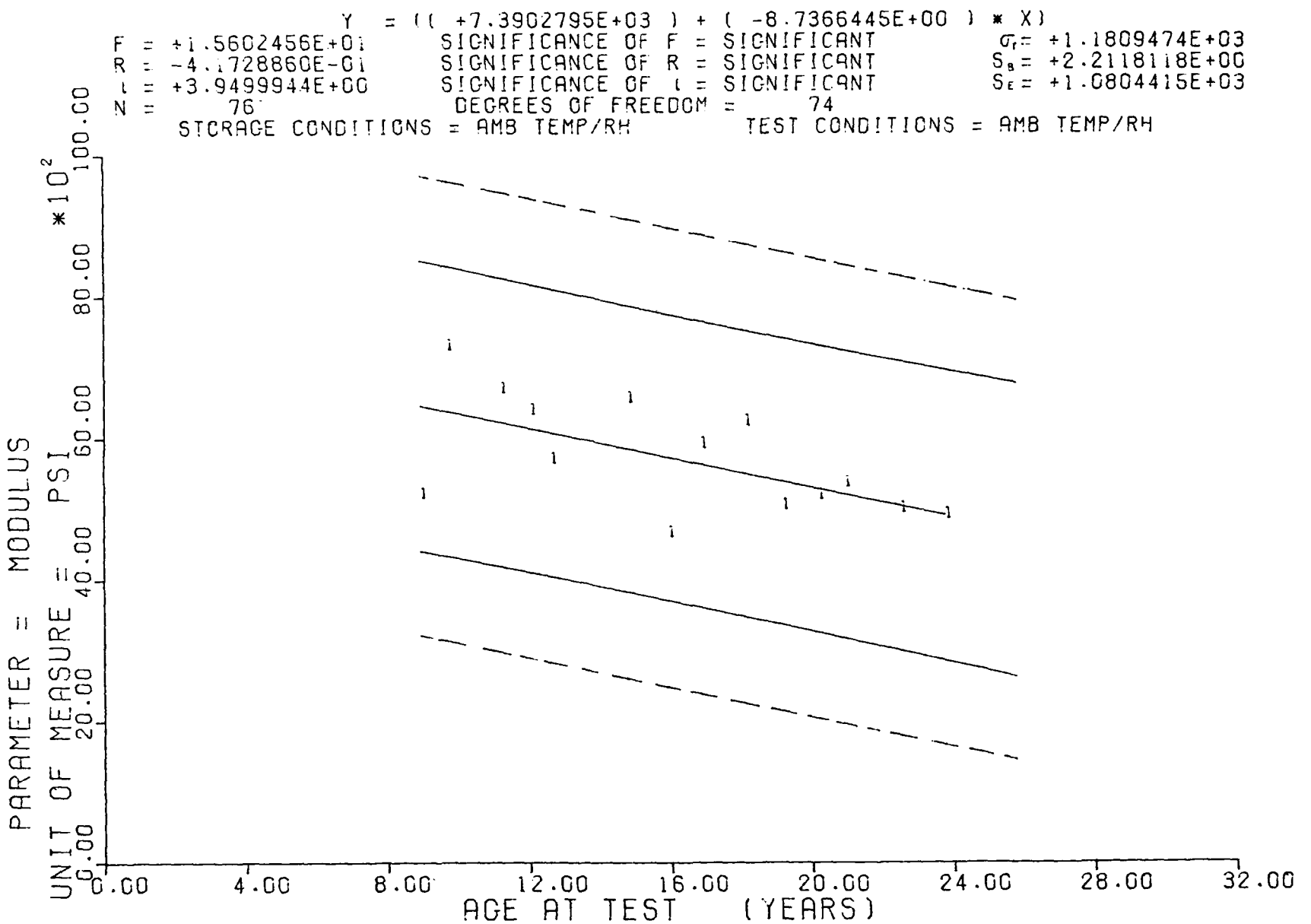
Figure 14

**** LINEAR REGRESSION ANALYSIS ****

*** ANALYSIS OF TIME SERIES ***

AGE (MONTHS)	SPECIMENS PER GROUP	MEAN Y	STANDARD DEVIATION	MAXIMUM Y	MINIMUM Y	REGRESSION Y
107.0	5	+3.2800000E+02	+7.5828754E+00	+3.3500000E+02	+3.2000000E+02	+3.1971972E+02
116.0	6	+3.2666650E+02	+7.5277265E+00	+3.3500000E+02	+3.2000000E+02	+3.2002807E+02
134.0	4	+3.2530224E+02	+1.4251193E+01	+3.4665991E+02	+3.1779980E+02	+3.2064477E+02
144.0	5	+3.2095385E+02	+2.4116321E+01	+3.5671997E+02	+2.9500000E+02	+3.2098754E+02
151.0	5	+3.1607983E+02	+1.1807691E+01	+3.3369995E+02	+3.0629980E+02	+3.2122729E+02
177.0	6	+3.2660986E+02	+1.5344678E+01	+3.5364990E+02	+3.0910986E+02	+3.2211816E+02
191.0	5	+3.0360791E+02	+3.2330114E+00	+3.0897998E+02	+3.0126977E+02	+3.2259790E+02
202.0	6	+2.9739990E+02	+3.4163447E+01	+3.3969995E+02	+2.6409985E+02	+3.2297460E+02
217.0	5	+3.3689990E+02	+4.1860334E+00	+3.4129980E+02	+3.3139990E+02	+3.2348876E+02
230.0	5	+3.1197998E+02	+5.9807723E+00	+3.1919995E+02	+3.0300000E+02	+3.2393408E+02
242.0	6	+3.1836645E+02	+2.2071578E+01	+3.6150000E+02	+2.9909985E+02	+3.2434521E+02
251.0	6	+3.4976660E+02	+1.4733102E+01	+3.7650000E+02	+3.3569995E+02	+3.2465356E+02
270.0	6	+3.3427148E+02	+4.5969595E+00	+3.4009985E+02	+3.2676977E+02	+3.2530468E+02
277.0	6	+3.1824145E+02	+1.1258968E+01	+3.3216992E+02	+3.0417993E+02	+3.2554443E+02
285.0	6	+3.2838818E+02	+9.6615983E+00	+3.3833984E+02	+3.1128979E+02	+3.2581860E+02

STAGE 1,DISSECTED MOTOR=0012190,HIGH RATE CHS=1750 IN/MIN,STRESS AT RUPTURE.



STAGE 1,DISSECTED MOTOR=0012199,HIGH RATE CHS=1750 IN/MIN,MODULUS.

Figure 15

**** LINEAR REGRESSION ANALYSIS ****

*** ANALYSIS OF TIME SERIES ***

AGE (MONTHS)	SPECIMENS PER GROUP	MEAN Y	STANDARD DEVIATION	MAXIMUM Y	MINIMUM Y	REGRESSION Y
107.0	5	+5.1600000E+03	+2.6076809E+02	+5.3000000E+03	+4.7000000E+03	+6.4554570E+03
116.0	6	+7.2500000E+03	+4.7217115E+02	+7.9000000E+03	+6.9000000E+03	+6.3768281E+03
134.0	4	+6.6422500E+03	+1.4248831E+03	+7.9540000E+03	+4.7720000E+03	+6.2195664E+03
144.0	5	+6.3445976E+03	+1.1460434E+03	+7.5060000E+03	+4.4890000E+03	+6.1321992E+03
151.0	5	+5.6535976E+03	+1.2763544E+03	+6.7050000E+03	+4.0070000E+03	+6.0710429E+03
177.0	6	+6.5138320E+03	+1.5559174E+03	+8.4660000E+03	+4.2250000E+03	+5.8438906E+03
191.0	5	+4.6150000E+03	+1.1466537E+03	+5.9510000E+03	+3.4780000E+03	+5.7215781E+03
202.0	6	+5.8655000E+03	+5.8876727E+02	+6.6660000E+03	+5.1120000E+03	+5.6254765E+03
217.0	5	+6.1871992E+03	+1.8067429E+02	+6.4400000E+03	+5.9700000E+03	+5.4944257E+03
230.0	5	+4.9920000E+03	+1.5638772E+03	+6.2230000E+03	+2.2550000E+03	+5.3808476E+03
242.0	5	+5.1380000E+03	+1.0026835E+03	+7.0570000E+03	+4.2330000E+03	+5.2760078E+03
251.0	6	+5.3113320E+03	+6.8442520E+02	+6.2910000E+03	+4.6170000E+03	+5.1973789E+03
270.0	6	+4.9470000E+03	+8.1479248E+02	+6.4750000E+03	+4.2160000E+03	+5.0313829E+03
285.0	6	+4.8631640E+03	+1.4149758E+02	+5.0950000E+03	+4.6680000E+03	+4.9003320E+03

STAGE 1,DISSECTED MOTOR=0012199,HIGH RATE CHS=1750 IN/MIN,MODULUS,

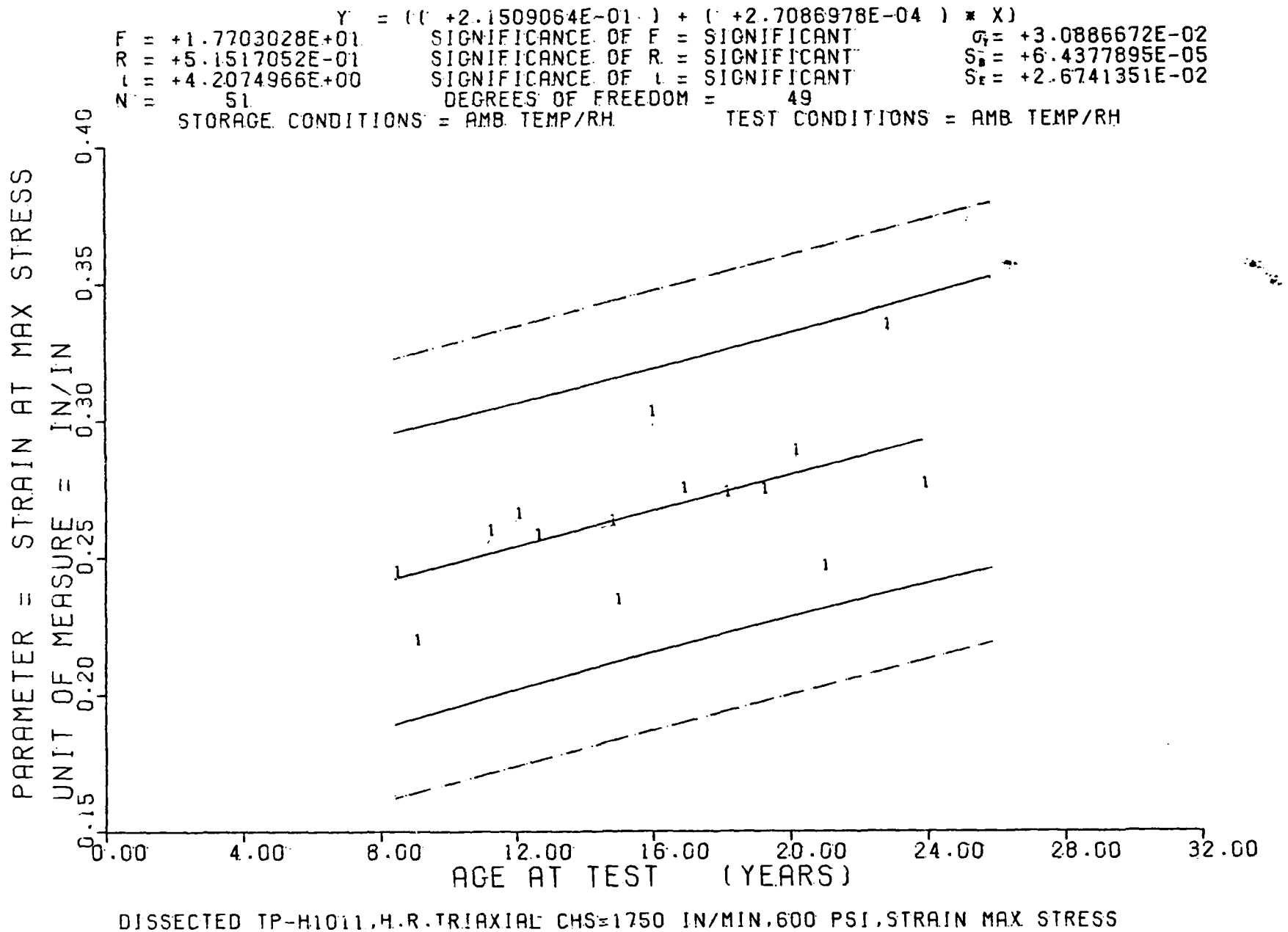

Y = ((+2.1509064E-01) + (+2.7086978E-04) * X)
F = +1.7703028E+01 SIGNIFICANCE OF F = SIGNIFICANT
R = +5.1517052E-01 SIGNIFICANCE OF R = SIGNIFICANT
t = +4.2074966E+00 SIGNIFICANCE OF t = SIGNIFICANT
N = 51 DEGREES OF FREEDOM = 49
σ_Y = +3.0886672E-02
S_B = +6.4377895E-05
S_E = +2.6741351E-02
STORAGE CONDITIONS = AMB TEMP/RH
TEST CONDITIONS = AMB TEMP/RH
PARAMETER = STRAIN AT MAX STRESS
UNIT OF MEASURE = IN/IN
0.15
0.20
0.25
0.30
0.35
0.40
0.00
4.00
8.00
12.00
16.00
20.00
24.00
28.00
32.00
AGE AT TEST (YEARS)
DISSECTED TP-H1011,H.R.TRIAXIAL CHS=1750 IN/MIN,600 PSI,STRAIN MAX STRESS

Figure 16

**** LINEAR REGRESSION ANALYSIS ****

*** ANALYSIS OF TIME SERIES ***

AGE (MONTHS)	SPECIMENS PER GROUP	MEAN Y	STANDARD DEVIATION	MAXIMUM Y	MINIMUM Y	REGRESSION Y
101.0	3	+2.4333328E-01	+1.0503744E-02	+2.5399994E-01	+2.3299998E-01	+2.4244844E-01
108.0	2	+2.1849995E-01	+7.7784373E-03	+2.2399997E-01	+2.1299999E-01	+2.4434453E-01
134.0	4	+2.5824975E-01	+2.3615550E-02	+2.8199994E-01	+2.3599994E-01	+2.5138717E-01
144.0	2	+2.6454997E-01	+1.7747857E-04	+2.6459997E-01	+2.6449996E-01	+2.5409585E-01
151.0	3	+2.5666663E-01	+4.0054300E-03	+2.6069998E-01	+2.5269997E-01	+2.5599193E-01
177.0	3	+2.6166659E-01	+1.1150359E-02	+2.6999998E-01	+2.4899995E-01	+2.6303458E-01
179.0	1	+2.3299998E-01	+0.0000000E+07	+2.3299998E-01	+2.3299998E-01	+2.6357632E-01
191.0	3	+3.0156660E-01	+9.2083226E-03	+3.0909997E-01	+2.9129999E-01	+2.6682674E-01
202.0	3	+2.7363330E-01	+4.9090398E-03	+2.7929997E-01	+2.7059996E-01	+2.6980632E-01
217.0	3	+2.7209997E-01	+1.8350040E-02	+2.8599995E-01	+2.5129997E-01	+2.7386933E-01
230.0	3	+2.7326661E-01	+7.5814519E-03	+2.7989995E-01	+2.6499998E-01	+2.7739065E-01
241.0	3	+2.8733325E-01	+5.5091478E-03	+2.9299998E-01	+2.8199994E-01	+2.8037023E-01
251.0	7	+2.4528557E-01	+4.2774511E-03	+2.5199997E-01	+2.4099999E-01	+2.8307890E-01
273.0	6	+3.3321630E-01	+1.1165329E-02	+3.5199999E-01	+3.1789994E-01	+2.8903806E-01
286.0	5	+2.7521967E-01	+1.7583019E-02	+3.0249994E-01	+2.5339996E-01	+2.9255938E-01

DISSECTED TP-H1011,H.R.TRIAXIAL CHS=1750 IN/MIN.60C PSI.STRAIN MAX STRESS

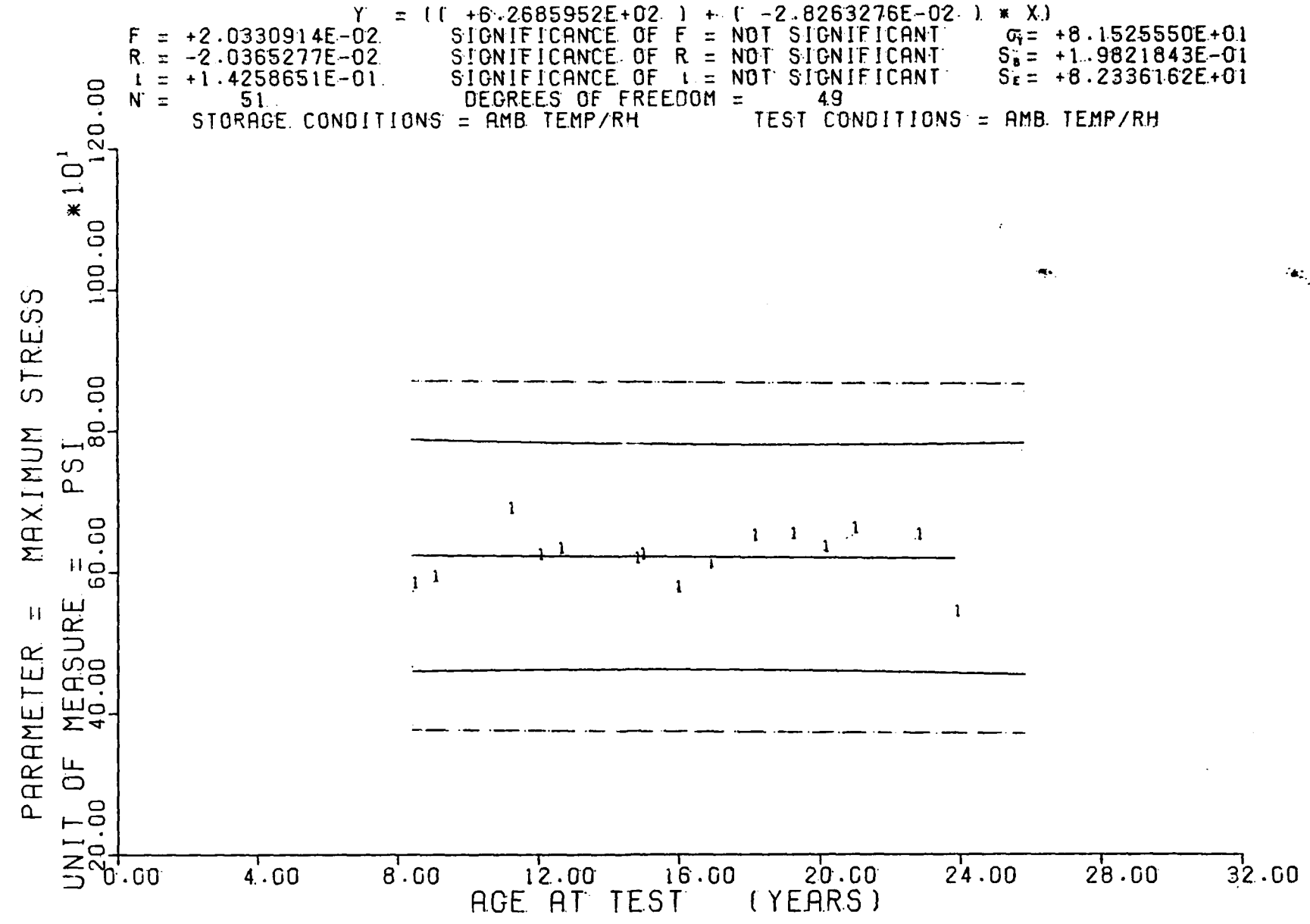

Y = (+6.2685952E+02) + (-2.8263276E-02) * X
F = +2.0330914E-02 SIGNIFICANCE OF F = NOT SIGNIFICANT σ = +8.1525550E+01
R = -2.0365277E-02 SIGNIFICANCE OF R = NOT SIGNIFICANT S_B = +1.9821843E-01
t = +1.4258651E-01 SIGNIFICANCE OF t = NOT SIGNIFICANT S_E = +8.2336162E+01
N = 51 DEGREES OF FREEDOM = 49
STORAGE CONDITIONS = AMB TEMP/RH TEST CONDITIONS = AMB TEMP/RH
PARAMETER = MAXIMUM STRESS
UNIT OF MEASURE = PSI *10^1
120.00
100.00
80.00
60.00
40.00
20.00
0.00
4.00
8.00
12.00
16.00
20.00
24.00
28.00
32.00
AGE AT TEST (YEARS)
DISSECTED TP-H1011,H.R.TRIAXIAL CHS=1750 IN/MIN,600 PSI,MAX. STRESS

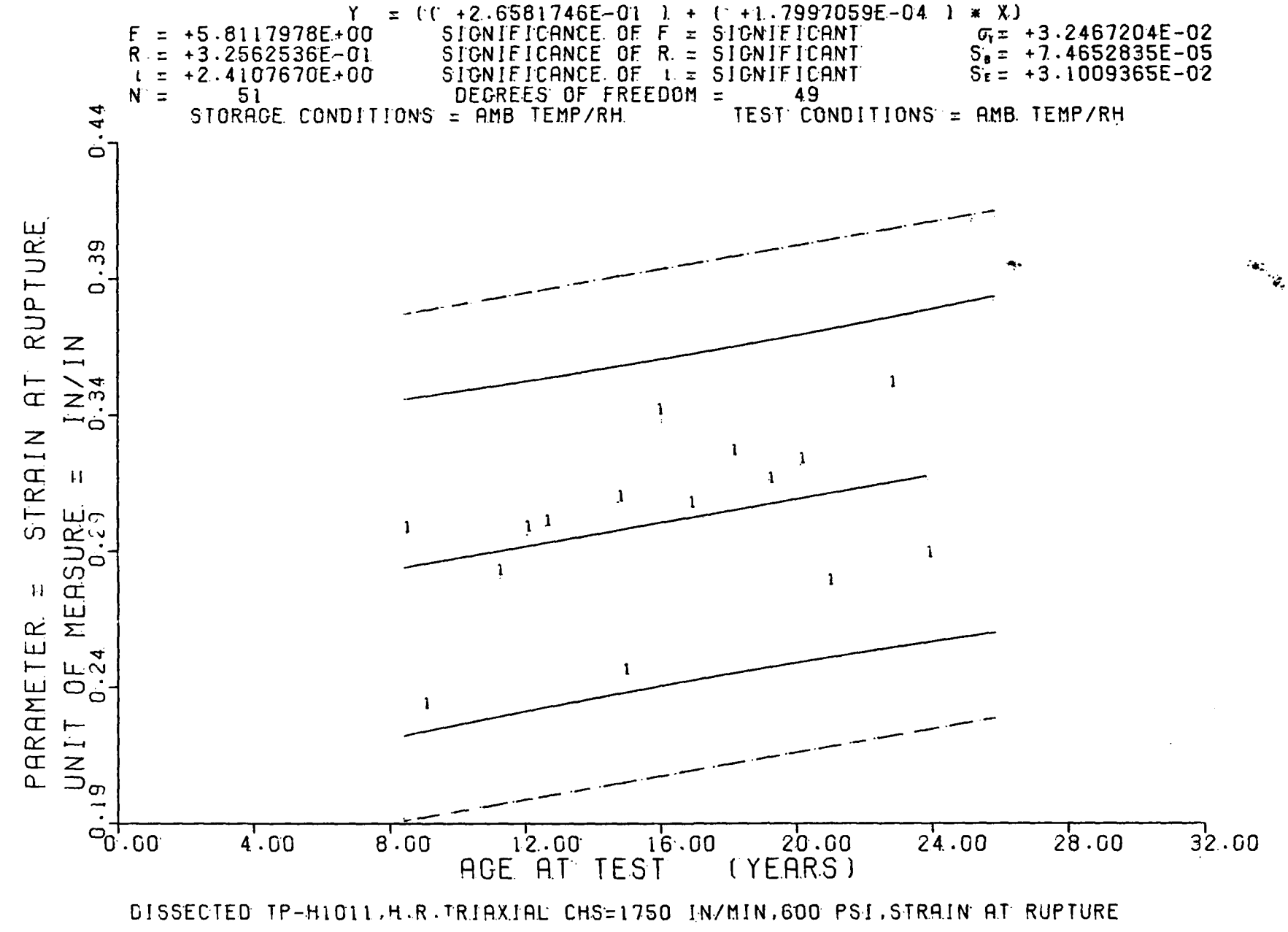
Figure 17

**** LINEAR REGRESSION ANALYSIS ****

*** ANALYSIS OF TIME SERIES ***

AGE (MONTHS)	SPECIMENS PER GROUP	MEAN Y	STANDARD DEVIATION	MAXIMUM Y	MINIMUM Y	REGRESSION Y
101.0	3	+5.7836303E+02	+.3468439E+00	+5.8736987E+02	+5.7091992E+02	+6.2400488E+02
108.0	2	+5.8750000E+02	+3.5355339E+00	+5.9000000E+02	+5.8500000E+02	+6.2380688E+02
134.0	4	+6.8384985E+02	+1.7545287E+01	+7.0579980E+02	+6.6309985E+02	+6.2307202E+02
144.0	2	+6.1826489E+02	+1.7449432E+01	+6.3059985E+02	+6.0592993E+02	+6.2278955E+02
151.0	3	+6.2729321E+02	+1.1372668E+01	+6.3505981E+02	+6.1425000E+02	+6.2259155E+02
177.0	3	+6.1272973E+02	+1.1471972E+01	+6.2488989E+02	+6.0209985E+02	+6.2185668E+02
179.0	1	+6.1889990E+02	+0.0000000E+07	+6.1889990E+02	+6.1889990E+02	+6.2180029E+02
191.0	3	+5.7182324E+02	+9.6139333E+00	+5.7920996E+02	+5.6095996E+02	+6.2146118E+02
202.0	3	+6.0717651E+02	+5.5697278E+00	+6.1257983E+02	+6.0143994E+02	+6.2115014E+02
217.0	3	+6.4525976E+02	+2.8294783E+01	+6.7781982E+02	+6.2669995E+02	+6.2072631E+02
230.0	3	+6.4762304E+02	+1.1927594E+01	+6.5552978E+02	+6.3389990E+02	+6.2035888E+02
241.0	3	+6.2986987E+02	+1.2282940E+01	+6.4069995E+02	+6.1616992E+02	+6.2004785E+02
251.0	7	+6.5520361E+02	+3.1246162E+01	+6.8344995E+02	+5.3785986E+02	+6.1976538E+02
273.0	6	+6.4625976E+02	+9.3662135E+00	+6.5616992E+02	+6.3040991E+02	+6.1914355E+02
296.0	5	+5.3674780E+02	+2.4414721E+02	+6.7533984E+02	+1.0178999E+02	+6.1877612E+02

DISSECTED TP-H1011,H.R.TRIAXIAL CHS=1750 IN/MIN.600 PSI.MAX STRESS



DISSECTED TP-H1011,H.R.TRIAXIAL CHS=1750 IN/MIN,600 PSI,STRAIN AT RUPTURE

Figure 18

**** LINEAR REGRESSION ANALYSIS ****

*** ANALYSIS OF TIME SERIES ***

AGE (MONTHS)	SPECIMENS PER GROUP	MEAN Y	STANDARD DEVIATION	MAXIMUM Y	MINIMUM Y	REGRESSION Y
101.0	3	+2.9733324E-01	+1.6041907E-02	+3.1399995E-01	+2.8199994E-01	+2.8399449E-01
108.0	2	+2.7249995E-01	+1.2021142E-02	+2.4099999E-01	+2.2399997E-01	+2.8525424E-01
134.0	4	+2.8149986E-01	+2.9012293E-02	+3.0699998E-01	+2.5299996E-01	+2.8993350E-01
144.0	2	+2.9749995E-01	+9.7593888E-03	+3.0439996E-01	+2.9059994E-01	+2.9173320E-01
151.0	3	+2.9966658E-01	+1.2503392E-02	+3.1399995E-01	+2.9099994E-01	+2.9299300E-01
177.0	3	+3.0833327E-01	+2.0647064E-02	+3.3199995E-01	+2.9399996E-01	+2.9767221E-01
179.0	1	+2.4499994E-01	+0.0000000E+07	+2.4499994E-01	+2.4499994E-01	+2.9803216E-01
191.0	3	+3.4026652E-01	+5.4680221E-03	+3.4589999E-01	+3.3499997E-01	+3.0019181E-01
202.0	3	+3.0616664E-01	+4.9918559E-03	+3.1169998E-01	+3.0199998E-01	+3.0217152E-01
217.0	3	+3.2533329E-01	+3.7166382E-02	+3.5599994E-01	+2.8399997E-01	+3.0487108E-01
230.0	3	+3.1499993E-01	+1.5522556E-02	+3.2999998E-01	+2.9899996E-01	+3.0721068E-01
241.0	3	+3.2333327E-01	+9.2899460E-03	+3.2999998E-01	+3.1199997E-01	+3.0919033E-01
251.0	7	+2.7771401E-01	+9.9008212E-03	+2.8899997E-01	+2.6599997E-01	+3.1099003E-01
273.0	6	+3.5031616E-01	+1.3337719E-02	+3.6739999E-01	+3.2979995E-01	+3.1494939E-01
296.0	5	+2.8789973E-01	+1.9559639E-02	+3.0759996E-01	+2.5859999E-01	+3.1728905E-01

DISSECTED TP-H1011,H,R,TRIAXIAL CHS=1750 IN/MIN,600 PSI,STRAIN AT RUPTURE

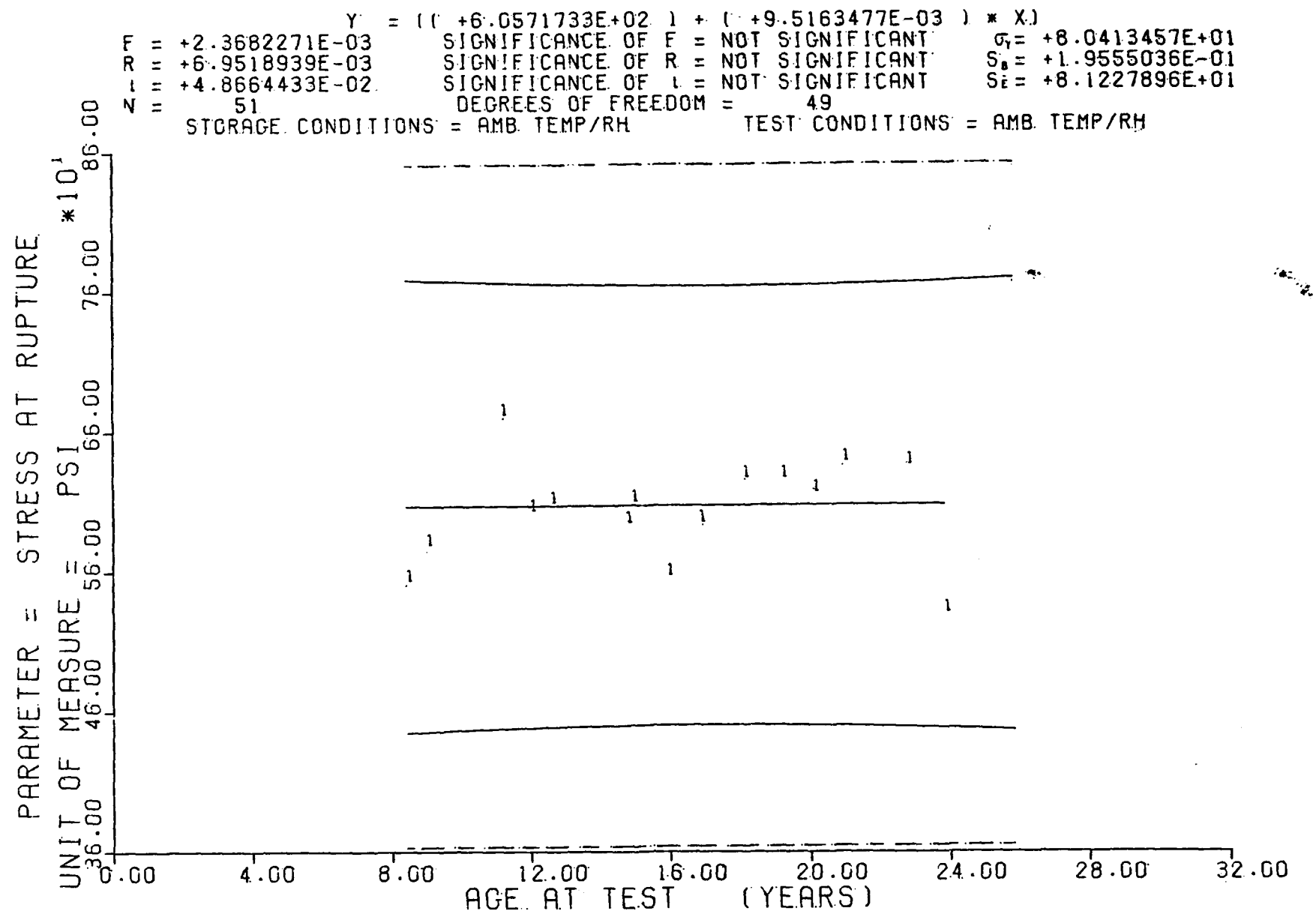

Y = (+6.0571733E+02) + (+9.5163477E-03) * X
F = +2.3682271E-03 SIGNIFICANCE OF F = NOT SIGNIFICANT σY = +8.0413457E+01
R = +6.9518939E-03 SIGNIFICANCE OF R = NOT SIGNIFICANT Sb = +1.9555036E-01
t = +4.8664433E-02 SIGNIFICANCE OF t = NOT SIGNIFICANT Se = +8.1227896E+01
N = 51 DEGREES OF FREEDOM = 49
STORAGE CONDITIONS = AMB TEMP/RH TEST CONDITIONS = AMB TEMP/RH
PARAMETER = STRESS AT RUPTURE
UNIT OF MEASURE = PSI *10¹
86.00
76.00
66.00
56.00
46.00
36.00
0.00
4.00
8.00
12.00
16.00
20.00
24.00
28.00
32.00
AGE AT TEST (YEARS)
DISSECTED TP-H1011,H.R.TRIAXIAL CHS=1750 IN/MIN,600 PSI,STRESS AT RUPTURE

Figure 19

**** LINEAR REGRESSION ANALYSIS ****

*** ANALYSIS OF TIME SERIES ***

AGE (MONTHS)	SPECIMENS PER GROUP	MEAN Y	STANDARD DEVIATION	MAXIMUM Y	MINIMUM Y	REGRESSION Y
101.0	3	+5.5439990E+02	+1.2138417E+01	+5.6789990E+02	+5.4439990E+02	+6.0667846E+02
108.0	2	+5.8000000E+02	+7.0710678E+00	+5.8500000E+02	+5.7500000E+02	+6.0674487E+02
134.0	4	+6.7267480E+02	+1.7404708E+01	+6.9689990E+02	+6.5550000E+02	+6.0699243E+02
144.0	2	+6.0435473E+02	+1.9063322E+01	+6.1782983E+02	+5.9087988E+02	+6.0708764E+02
151.0	3	+6.0989990E+02	+8.8692548E+00	+6.1939990E+02	+6.0179980E+02	+6.0715429E+02
177.0	3	+5.9539990E+02	+9.6067201E+00	+6.0519995E+02	+5.8600000E+02	+6.0740161E+02
179.0	1	+6.1069995E+02	+0.0000000E+07	+6.1069995E+02	+6.1069995E+02	+6.0742065E+02
191.0	3	+5.5800976E+02	+1.0816872E+01	+5.7008984E+02	+5.4922998E+02	+6.0753491E+02
202.0	3	+5.9619628E+02	+5.5844651E+00	+6.0226977E+02	+5.9129980E+02	+6.0763940E+02
217.0	3	+6.2813305E+02	+3.5056925E+01	+6.6859985E+02	+6.0700000E+02	+6.0778222E+02
230.0	3	+6.2783325E+02	+2.0557519E+01	+6.4489990E+02	+6.0500000E+02	+6.0790600E+02
241.0	3	+6.1773974E+02	+9.8289121E+00	+6.2750000E+02	+6.0781982E+02	+6.0801074E+02
251.0	7	+6.3955517E+02	+3.0278197E+01	+6.6539990E+02	+5.7469995E+02	+6.0810571E+02
273.0	6	+6.3726147E+02	+9.2039851E+00	+6.5148999E+02	+6.2402978E+02	+6.0831518E+02
286.0	5	+5.3175976E+02	+2.4106080E+02	+6.6004980E+02	+1.0178999E+02	+6.0843896E+02

DISSECTED TP-H1011,H.R.TRIAXIAL CHS=1750 IN/MIN,600 PSI,STRESS AT RUPTURE

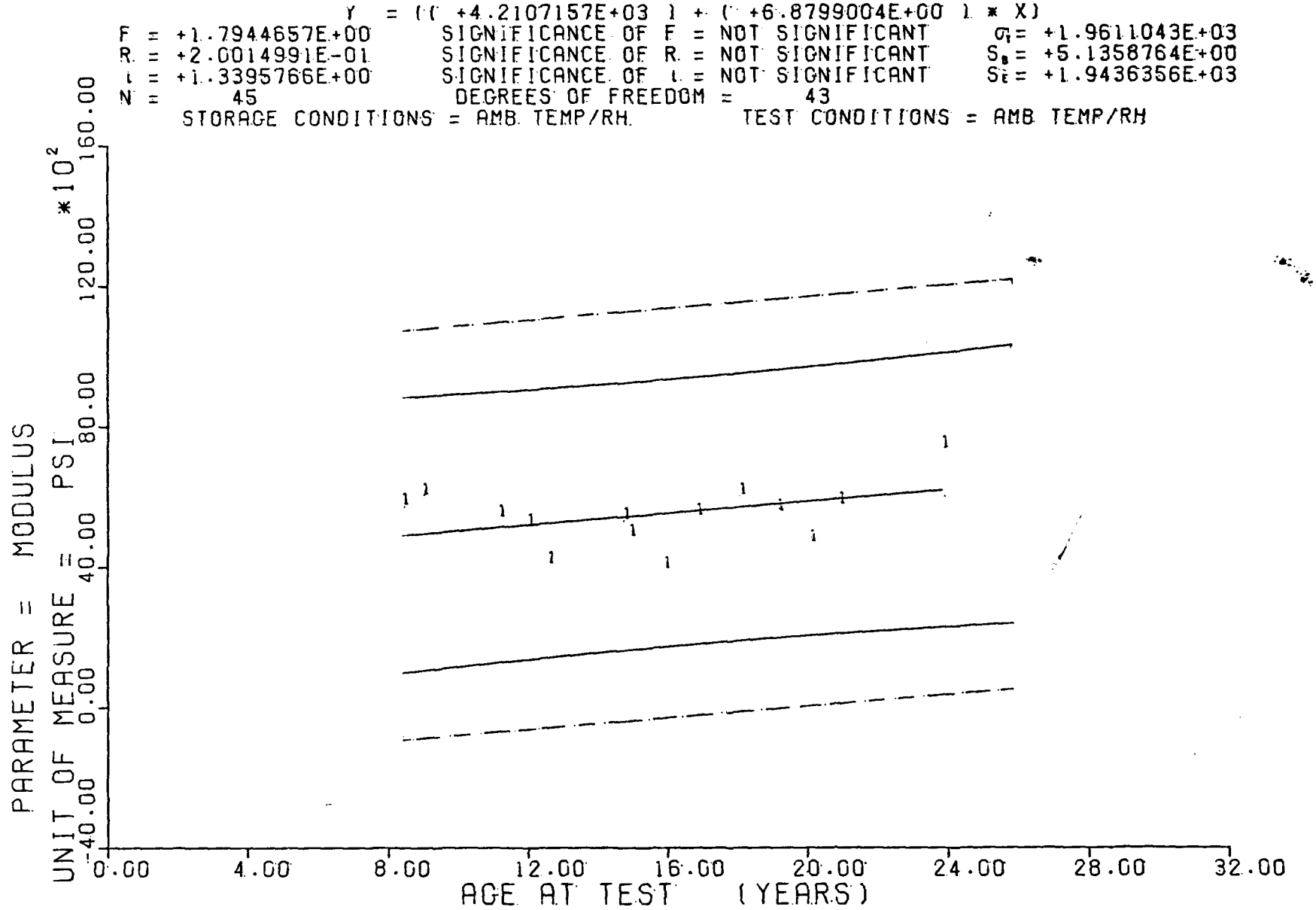

Y = (+4.2107157E+03) + (+6.8799004E+00) * X)
F = +1.7944657E+00 SIGNIFICANCE OF F = NOT SIGNIFICANT σ = +1.9611043E+03
R = +2.0014991E-01 SIGNIFICANCE OF R = NOT SIGNIFICANT Sb = +5.1358764E+00
I = +1.3395766E+00 SIGNIFICANCE OF I = NOT SIGNIFICANT Se = +1.9436356E+03
N = 45 DEGREES OF FREEDOM = 43
STORAGE CONDITIONS = AMB TEMP/RH TEST CONDITIONS = AMB TEMP/RH
PARAMETER = MODULUS
UNIT OF MEASURE = PSI *10²
160.00
120.00
80.00
40.00
0.00
-40.00
0.00
4.00
8.00
12.00
16.00
20.00
24.00
28.00
32.00
AGE AT TEST (YEARS)
DISSECTED TP-H1011,H.R.TRIAXIAL CHS=1750 IN/MIN,600 PSI,MODULUS

Figure 20

**** LINEAR REGRESSION ANALYSIS ****

*** ANALYSIS OF TIME SERIES ***

AGE (MONTHS)	SPECIMENS PER GROUP	MEAN Y	STANDARD DEVIATION	MAXIMUM Y	MINIMUM Y	REGRESSION Y
101.0	3	+5.8113320E+03	+3.9279426E+02	+6.1640000E+03	+5.3880000E+03	+4.9055820E+03
108.0	2	+6.1000000E+03	+1.4142135E+02	+6.2000000E+03	+6.0000000E+03	+4.9537421E+03
134.0	4	+5.4572500E+03	+1.4371835E+03	+7.5830000E+03	+4.4230000E+03	+5.1326210E+03
144.0	2	+5.2200000E+03	+4.5254833E+01	+5.2520000E+03	+5.1880000E+03	+5.2014179E+03
151.0	3	+4.1356640E+03	+5.8507421E+02	+4.7150000E+03	+3.5450000E+03	+5.2495781E+03
177.0	3	+5.3960000E+03	+7.2776919E+02	+6.0000000E+03	+4.5880000E+03	+5.4284570E+03
179.0	1	+4.9180000E+03	+0.0000000E+07	+4.9180000E+03	+4.9180000E+03	+5.4422148E+03
191.0	3	+3.9933332E+03	+2.1059281E+02	+4.2350000E+03	+3.8490000E+03	+5.5247734E+03
202.0	3	+5.5020000E+03	+3.2701376E+02	+5.8790000E+03	+5.2950000E+03	+5.6004531E+03
217.0	3	+6.0786640E+03	+2.3596044E+02	+6.3510000E+03	+5.9350000E+03	+5.7036523E+03
230.0	3	+5.6190000E+03	+5.0936283E+02	+6.0690000E+03	+5.0660000E+03	+5.7930898E+03
241.0	3	+4.7383320E+03	+1.4218239E+02	+4.8600000E+03	+4.5820000E+03	+5.8687695E+03
251.0	7	+5.8148554E+03	+3.6410411E+02	+6.3960000E+03	+5.2940000E+03	+5.9375703E+03
286.0	5	+7.4093984E+03	+5.5631808E+03	+1.7352000E+04	+4.5890000E+03	+6.1783671E+03

DISSECTED TP-H1011,H.R.TRIAXIAL CHS=1750 IN/MIN.600 PSI.MODULUS

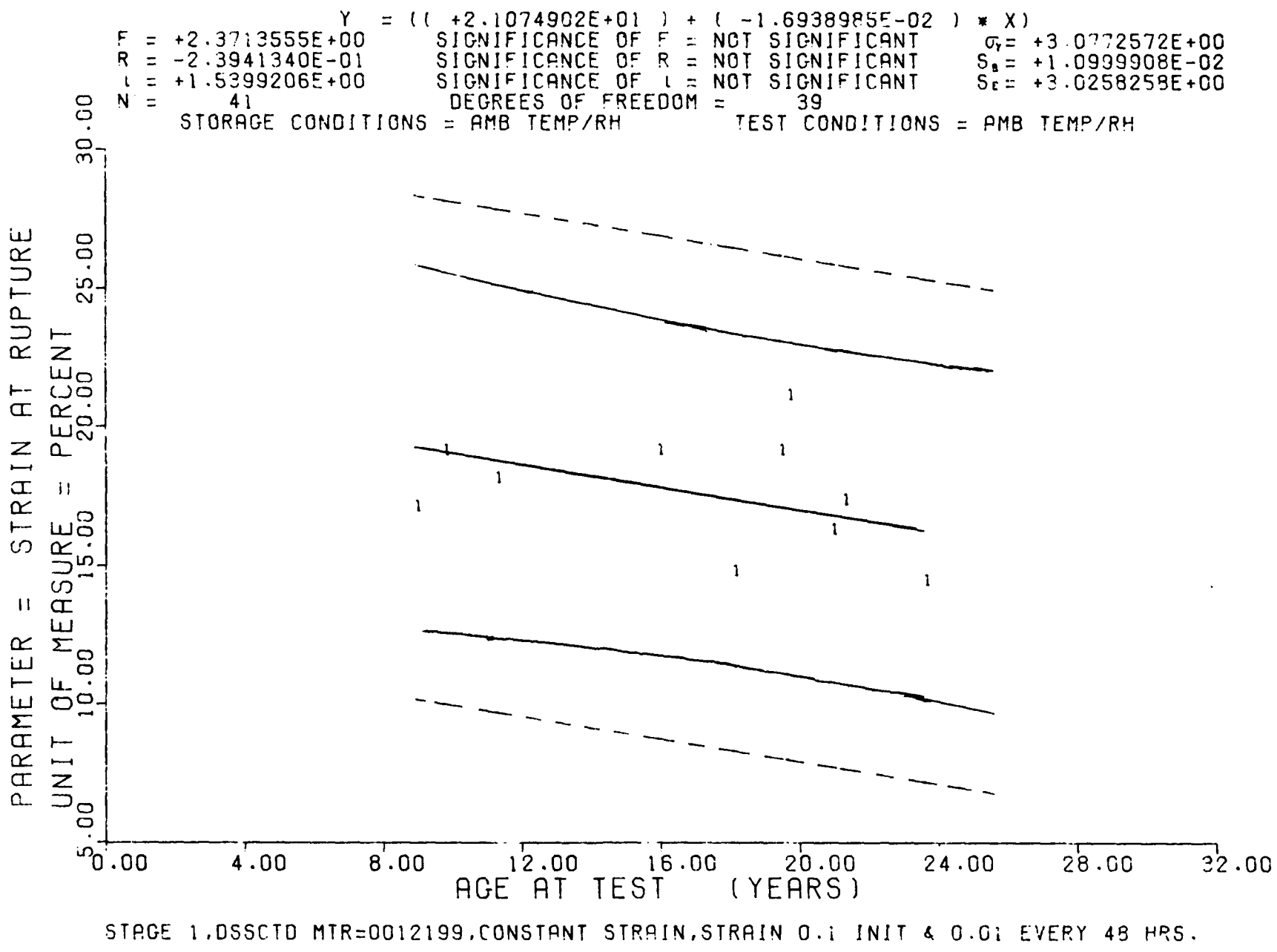

Y = ((+2.1074902E+01) + (-1.6938985E-02) * X)
F = +2.3713555E+00 SIGNIFICANCE OF F = NOT SIGNIFICANT σy= +3.0772572E+00
R = -2.3941340E-01 SIGNIFICANCE OF R = NOT SIGNIFICANT Sa= +1.0999908E-02
I = +1.5399206E+00 SIGNIFICANCE OF I = NOT SIGNIFICANT Sε= +3.0258258E+00
N = 41 DEGREES OF FREEDOM = 39
STORAGE CONDITIONS = AMB TEMP/RH TEST CONDITIONS = AMB TEMP/RH
PARAMETER = STRAIN AT RUPTURE
UNIT OF MEASURE = PERCENT
30.00
25.00
20.00
15.00
10.00
5.00
0.00
4.00
8.00
12.00
16.00
20.00
24.00
28.00
32.00
AGE AT TEST (YEARS)
STAGE 1,DSSCTD MTR=0012199,CONSTANT STRAIN,STRAIN 0.1 INIT & 0.01 EVERY 48 HRS.

Figure 21

**** LINEAR REGRESSION ANALYSIS ****

*** ANALYSIS OF TIME SERIES ***

AGE (MONTHS)	SPECIMENS PER GROUP	MEAN Y	STANDARD DEVIATION	MAXIMUM Y	MINIMUM Y	REGRESSION Y
107.0	1	+1.7000000E+01	+0.0000000E+07	+1.7000000E+01	+1.7000000E+01	+1.9262420E+01
117.0	1	+1.9000000E+01	+0.0000000E+07	+1.9000000E+01	+1.9000000E+01	+1.9093032E+01
135.0	2	+1.8000000E+01	+1.4142135E+00	+1.9000000E+01	+1.7000000E+01	+1.8788131E+01
191.0	2	+1.9000000E+01	+0.0000000E+07	+1.9000000E+01	+1.9000000E+01	+1.7839553E+01
217.0	3	+1.4666666E+01	+5.7735026E-01	+1.5000000E+01	+1.4000000E+01	+1.7399139E+01
233.0	4	+1.9000000E+01	+0.0000000E+07	+1.9000000E+01	+1.9000000E+01	+1.7128112E+01
236.0	3	+2.1000000E+01	+0.0000000E+07	+2.1000000E+01	+2.1000000E+01	+1.7077301E+01
251.0	6	+1.6166656E+01	+9.8319208E-01	+1.8000000E+01	+1.5000000E+01	+1.6823211E+01
255.0	13	+1.7230758E+01	+4.3618391E+00	+2.2000000E+01	+1.0000000E+01	+1.6755447E+01
283.0	6	+1.4333333E+01	+5.1639777E-01	+1.5000000E+01	+1.4000000E+01	+1.6281158E+01

95

STAGE 1,DSSCTD MTR=0012199,CONSTANT STRAIN,STRAIN 0.1 INIT & 0.01 EVERY 48 HRS.

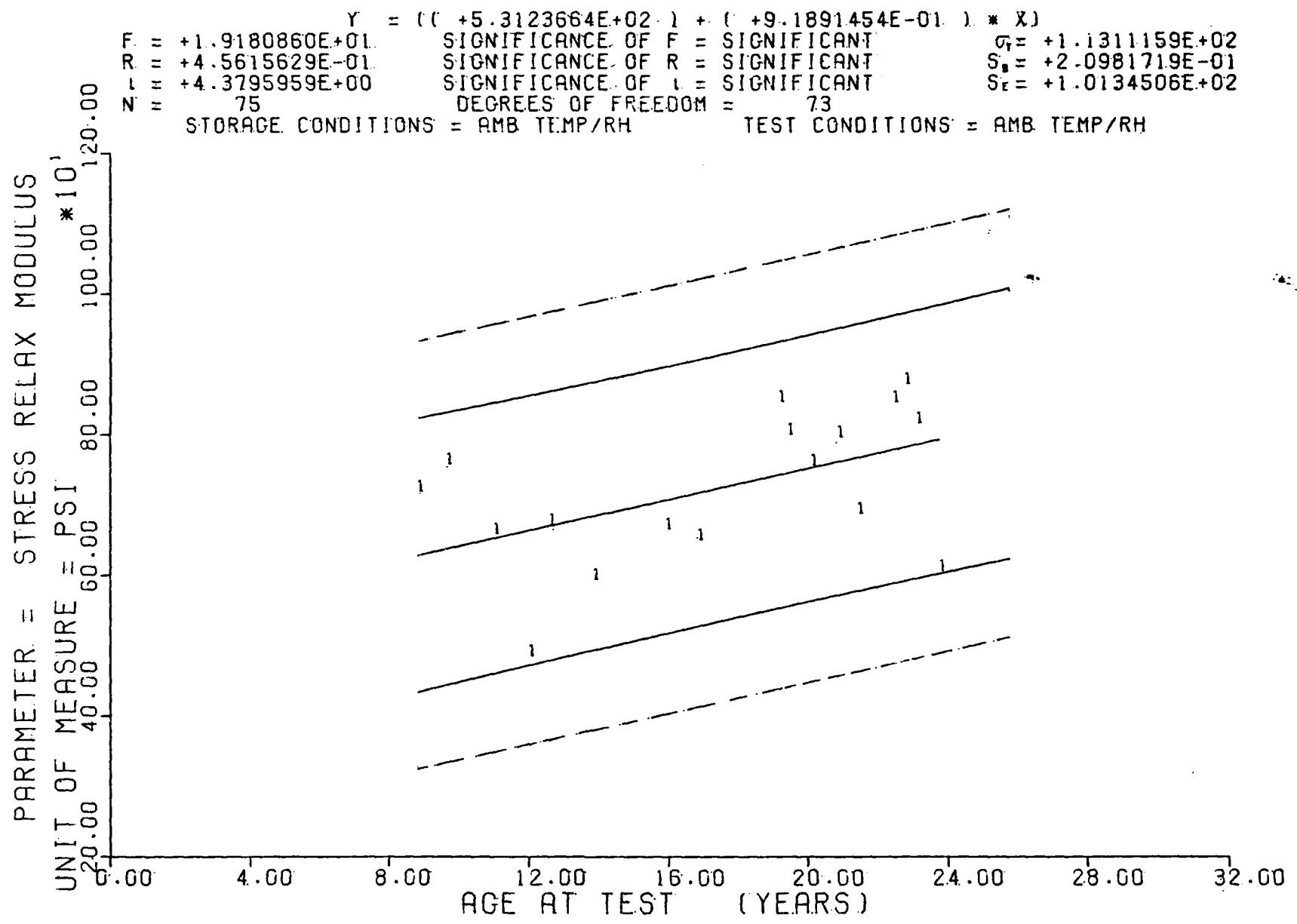

Y = ((+5.3123664E+02) + (+9.1891454E-01) * X)
F = +1.9180860E+01 SIGNIFICANCE OF F = SIGNIFICANT σr = +1.1311159E+02
R = +4.5615629E-01 SIGNIFICANCE OF R = SIGNIFICANT Sb = +2.0981719E-01
t = +4.3795959E+00 SIGNIFICANCE OF t = SIGNIFICANT Sε = +1.0134506E+02
N = 75 DEGREES OF FREEDOM = 73
STORAGE CONDITIONS = AMB TEMP/RH TEST CONDITIONS = AMB TEMP/RH
PARAMETER = STRESS RELAX MODULUS
UNIT OF MEASURE = PSI *10¹
120.00
100.00
80.00
60.00
40.00
20.00
0.00
4.00
8.00
12.00
16.00
20.00
24.00
28.00
32.00
AGE AT TEST (YEARS)
STAGE 1,DISCTED MOTOR=0012199,STRESS RELAXATION MODULUS,3 % STRAIN AT 10 SEC.

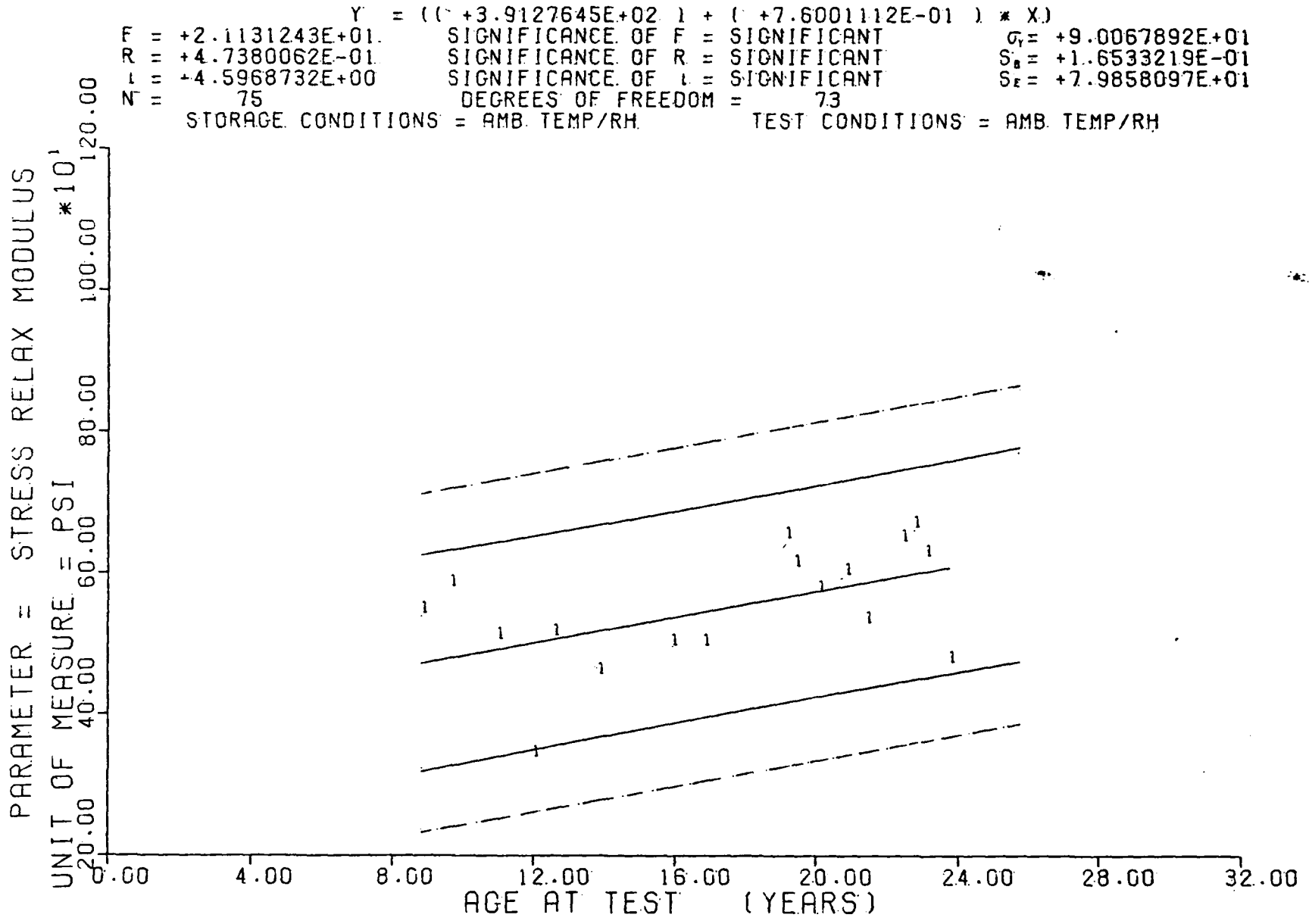
Figure 22

**** LINEAR REGRESSION ANALYSIS ****

*** ANALYSIS OF TIME SERIES ***

AGE (MONTHS)	SPECIMENS PER GROUP	MEAN Y	STANDARD DEVIATION	MAXIMUM Y	MINIMUM Y	REGRESSION Y
106.0	3	+7.2000000E+02	+5.1961524E+01	+7.5000000E+02	+6.6000000E+02	+6.2864135E+02
116.0	3	+7.5866650E+02	+1.5044378E+01	+7.7300000E+02	+7.4300000E+02	+6.3783056E+02
132.0	3	+6.6000000E+02	+1.6999999E+01	+6.7700000E+02	+6.4300000E+02	+6.5253320E+02
144.0	4	+4.8650000E+02	+3.7278233E+01	+5.2000000E+02	+4.4000000E+02	+6.6356030E+02
151.0	3	+6.7233325E+02	+3.2331615E+01	+7.0700000E+02	+6.4300000E+02	+6.6999267E+02
166.0	3	+5.9433325E+02	+3.5571524E+01	+6.3300000E+02	+5.6300000E+02	+6.8377636E+02
191.0	3	+6.6700000E+02	+2.6457513E+01	+6.9700000E+02	+6.4700000E+02	+7.0674926E+02
201.0	3	+6.5100000E+02	+7.2111025E+00	+6.5700000E+02	+6.4300000E+02	+7.1685717E+02
210.0	3	+8.4766650E+02	+1.2858201E+01	+8.5700000E+02	+8.3300000E+02	+7.4258691E+02
233.0	6	+8.0116650E+02	+5.8406905E+01	+8.6300000E+02	+7.1000000E+02	+7.4534350E+02
241.0	6	+7.5666650E+02	+8.0955955E+01	+8.7300000E+02	+6.4300000E+02	+7.5269482E+02
250.0	6	+7.9716650E+02	+1.0614973E+02	+9.5300000E+02	+6.8300000E+02	+7.6096508E+02
257.0	6	+6.8833325E+02	+3.5154895E+01	+7.2300000E+02	+6.4300000E+02	+7.6739746E+02
269.0	6	+8.4666650E+02	+2.0056586E+01	+8.8000000E+02	+8.2000000E+02	+7.7842456E+02
273.0	6	+8.7256650E+02	+4.9139257E+01	+9.3300000E+02	+7.9300000E+02	+7.8210009E+02
277.0	6	+8.1733325E+02	+3.3386624E+01	+8.5000000E+02	+7.6700000E+02	+7.8577587E+02
285.0	5	+6.0675980E+02	+5.1295223E+01	+6.8000000E+02	+5.3700000E+02	+7.9312719E+02

STAGE 1,DISCTED MOTOR=0012199,STRESS RELAXATION MODULUS,3 % STRAIN AT 10 SEC.



STAGE 1,DISCTED MOTOR=0012199,STRESS RELAXATION MODULUS,3 % STRAIN AT 50 SEC.

Figure 23

**** LINEAR REGRESSION ANALYSIS ****

*** ANALYSIS OF TIME SERIES ***

AGE (MONTHS)	SPECIMENS PER GROUP	MEAN Y	STANDARD DEVIATION	MAXIMUM Y	MINIMUM Y	REGRESSION Y
106.0	3	+5.4400000E+02	+3.8105117E+01	+5.6600000E+02	+5.0000000E+02	+4.7183740E+02
116.0	3	+5.8200000E+02	+2.0074859E+01	+6.0300000E+02	+5.6300000E+02	+4.7943774E+02
132.0	3	+5.0766650E+02	+1.5011106E+01	+5.2300000E+02	+4.9300000E+02	+4.9159790E+02
144.0	4	+3.4100000E+02	+1.8018509E+01	+3.6000000E+02	+3.1700000E+02	+5.0071801E+02
151.0	3	+5.1233325E+02	+2.6576932E+01	+5.4000000E+02	+4.8700000E+02	+5.0603808E+02
166.0	3	+4.5766650E+02	+2.7300793E+01	+4.8700000E+02	+4.3300000E+02	+5.1743823E+02
191.0	3	+4.9900000E+02	+2.0297783E+01	+5.1700000E+02	+4.7700000E+02	+5.3643847E+02
202.0	3	+4.9866650E+02	+5.1316014E+00	+5.0300000E+02	+4.9300000E+02	+5.4479858E+02
230.0	3	+6.5100000E+02	+1.8248287E+01	+6.6300000E+02	+6.3000000E+02	+5.6607885E+02
233.0	6	+6.1100000E+02	+5.0019996E+01	+6.6000000E+02	+5.3700000E+02	+5.6835888E+02
241.0	6	+5.7500000E+02	+7.0350550E+01	+6.7000000E+02	+4.8000000E+02	+5.7443896E+02
250.0	6	+5.9950000E+02	+8.7161344E+01	+7.2000000E+02	+5.0000000E+02	+5.8127905E+02
257.0	6	+5.3100000E+02	+2.6795522E+01	+5.6000000E+02	+4.9700000E+02	+5.8659912E+02
269.0	6	+6.4666650E+02	+1.4334108E+01	+6.6700000E+02	+6.3300000E+02	+5.9571923E+02
273.0	6	+6.6550000E+02	+3.7324254E+01	+7.1000000E+02	+5.9700000E+02	+5.9875927E+02
277.0	6	+6.2600000E+02	+2.9257477E+01	+6.5300000E+02	+5.8700000E+02	+6.0179931E+02
285.0	5	+4.7519995E+02	+4.0375735E+01	+5.3300000E+02	+4.2000000E+02	+6.0787939E+02

STAGE 1,DISCTED MOTOR=0012199,STRESS RELAXATION MODULUS,3 % STRAIN AT 50 SEC.

09

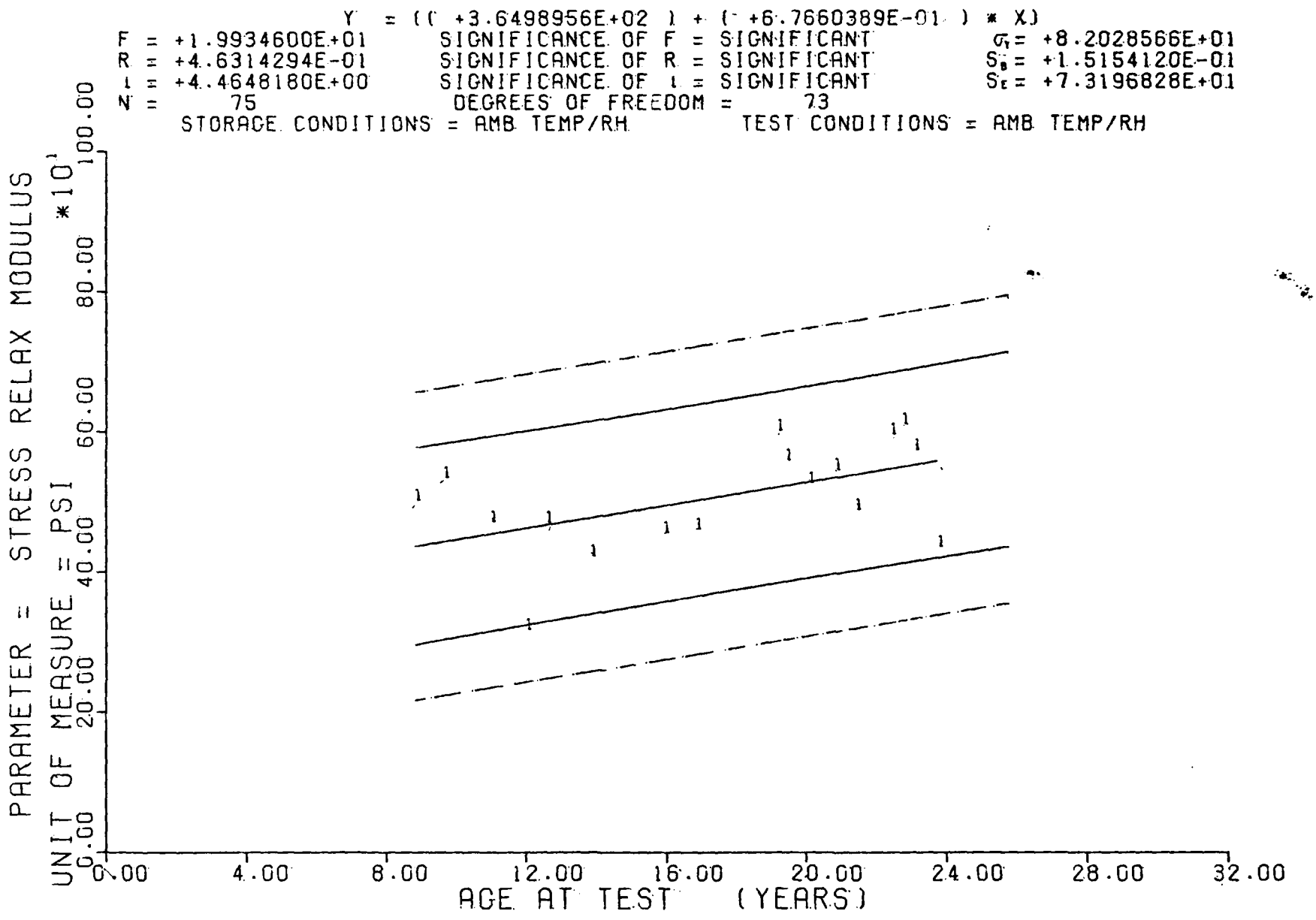

Y = ((+3.6498956E+02) + (+6.7660389E-01) * X)
F = +1.9934600E+01 SIGNIFICANCE OF F = SIGNIFICANT σt = +8.2028566E+01
R = +4.6314294E-01 SIGNIFICANCE OF R = SIGNIFICANT Sβ = +1.5154120E-01
t = +4.4648180E+00 SIGNIFICANCE OF t = SIGNIFICANT Se = +7.3196828E+01
N = 75 DEGREES OF FREEDOM = 73
STORAGE CONDITIONS = AMB TEMP/RH TEST CONDITIONS = AMB TEMP/RH
PARAMETER = STRESS RELAX MODULUS
UNIT OF MEASURE = PSI *10¹
0.00
20.00
40.00
60.00
80.00
100.00
0.00
4.00
8.00
12.00
16.00
20.00
24.00
28.00
32.00
AGE AT TEST (YEARS)
STAGE 1,DISCTED MOTOR=0012199,STRESS RELAXATION MODULUS,3 % STRAIN AT 100 SEC.

Figure 24

**** LINEAR REGRESSION ANALYSIS ****

*** ANALYSIS OF TIME SERIES ***

AGE (MONTHS)	SPECIMENS PER GROUP	MEAN Y	STANDARD DEVIATION	MAXIMUM Y	MINIMUM Y	REGRESSION Y
106.0	3	+5.0300000E+02	+3.4641016E+01	+5.2300000E+02	+4.6300000E+02	+4.3670947E+02
116.0	3	+5.3500000E+02	+2.0074859E+01	+5.5600000E+02	+5.1600000E+02	+4.4347558E+02
132.0	3	+4.7233325E+02	+1.3650396E+01	+4.8700000E+02	+4.6000000E+02	+4.5430126E+02
144.0	4	+3.1825000E+02	+2.0451161E+01	+3.4300000E+02	+2.9300000E+02	+4.6242041E+02
151.0	3	+4.7133325E+02	+2.5026652E+01	+4.9700000E+02	+4.4700000E+02	+4.6715673E+02
166.0	3	+4.2333325E+02	+2.5166114E+01	+4.5000000E+02	+4.0000000E+02	+4.7730566E+02
191.0	3	+4.5666650E+02	+1.8230011E+01	+4.7300000E+02	+4.3700000E+02	+4.9422070E+02
202.0	3	+4.6133325E+02	+5.1316014E+00	+4.6700000E+02	+4.5700000E+02	+5.0166333E+02
230.0	3	+6.0233325E+02	+1.7473789E+01	+6.1700000E+02	+5.8300000E+02	+5.2060839E+02
233.0	6	+5.5983325E+02	+4.6145061E+01	+6.0300000E+02	+4.9300000E+02	+5.2263818E+02
241.0	6	+5.2666650E+02	+6.5071243E+01	+6.1300000E+02	+4.3700000E+02	+5.2805102E+02
250.0	6	+5.4616650E+02	+8.2509191E+01	+6.6000000E+02	+4.4300000E+02	+5.3414038E+02
257.0	6	+4.8950000E+02	+2.3338808E+01	+5.1300000E+02	+4.5700000E+02	+5.3887670E+02
269.0	6	+5.9716650E+02	+1.2139467E+01	+6.1300000E+02	+5.8300000E+02	+5.4699584E+02
273.0	6	+6.1116650E+02	+3.1990102E+01	+6.5000000E+02	+5.5300000E+02	+5.4970239E+02
277.0	6	+5.7450000E+02	+2.9139320E+01	+6.0300000E+02	+5.3700000E+02	+5.5240869E+02
285.0	5	+4.3659985E+02	+3.6773631E+01	+4.9000000E+02	+3.8700000E+02	+5.5782153E+02

STAGE 1,DISCTED MOTOR=0012199,STRESS RELAXATION MODULUS,3 % STRAIN AT 100 SEC.

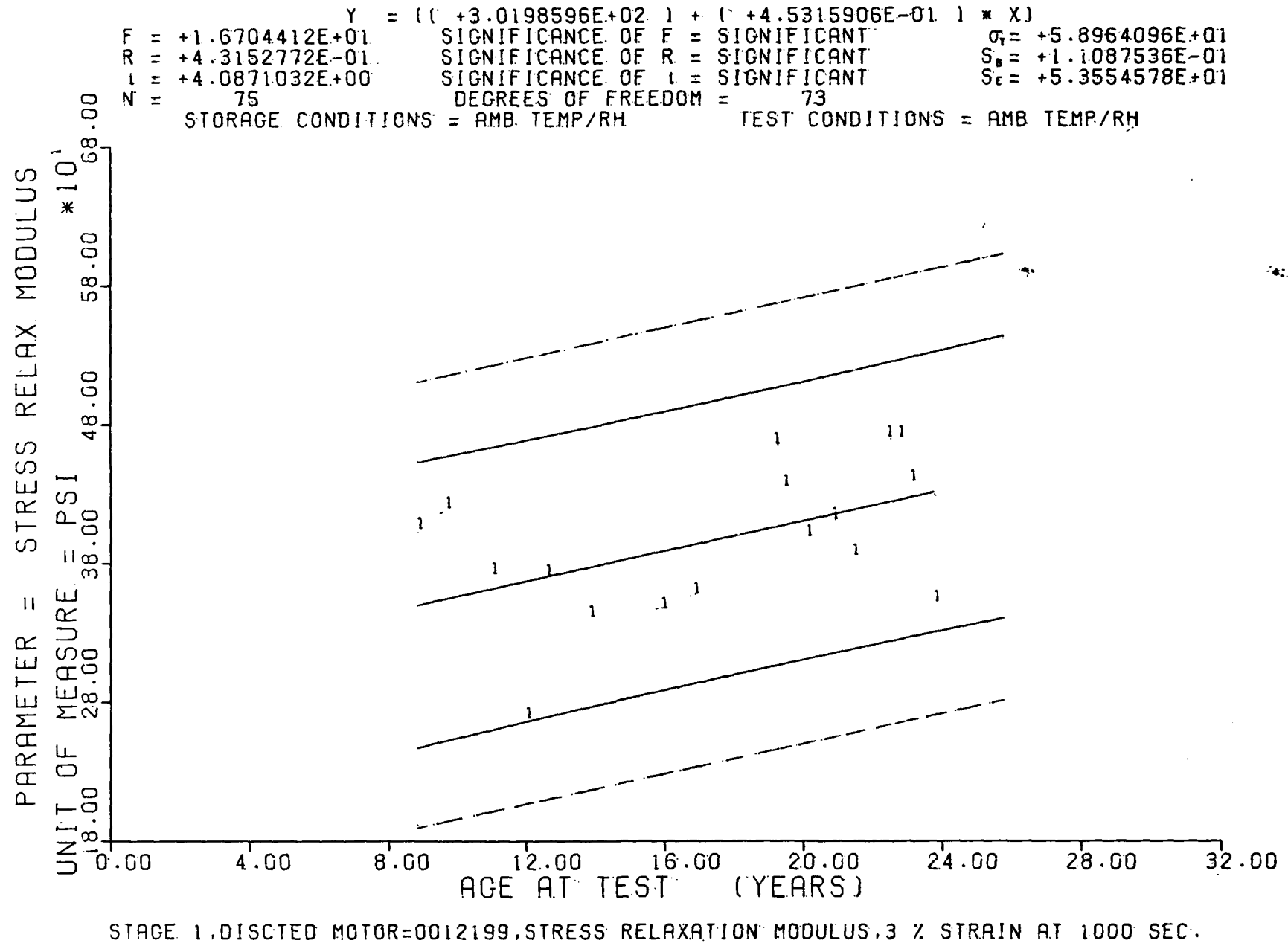

Y = (+3.0198596E+02) + (+4.5315906E-01) * X
F = +1.6704412E+01 SIGNIFICANCE OF F = SIGNIFICANT
R = +4.3152772E-01 SIGNIFICANCE OF R = SIGNIFICANT
t = +4.0871032E+00 SIGNIFICANCE OF t = SIGNIFICANT
N = 75 DEGREES OF FREEDOM = 73
STORAGE CONDITIONS = AMB TEMP/RH TEST CONDITIONS = AMB TEMP/RH
PARAMETER = STRESS RELAX MODULUS
UNIT OF MEASURE = PSI *10¹
18.00
28.00
38.00
48.00
58.00
68.00
0.00
4.00
8.00
12.00
16.00
20.00
24.00
28.00
32.00
AGE AT TEST (YEARS)
STAGE 1,DISCTED MOTOR=0012199,STRESS RELAXATION MODULUS,3 % STRAIN AT 1000 SEC.

Figure 25

**** LINEAR REGRESSION ANALYSIS ****

*** ANALYSIS OF TIME SERIES ***

AGE (MONTHS)	SPECIMENS PER GROUP	MEAN Y	STANDARD DEVIATION	MAXIMUM Y	MINIMUM Y	REGRESSION Y
106.0	3	+4.0600000E+02	+3.4641016E+01	+4.2600000E+02	+3.6600000E+02	+3.5002075E+02
116.0	3	+4.2066650E+02	+1.3613718E+01	+4.3600000E+02	+4.1000000E+02	+3.5455224E+02
132.0	3	+3.7333325E+02	+1.2342339E+01	+3.8700000E+02	+3.6300000E+02	+3.6180273E+02
144.0	4	+2.6900000E+02	+2.3888630E+01	+3.0300000E+02	+2.4700000E+02	+3.6724072E+02
151.0	3	+3.7200000E+02	+1.8520259E+01	+3.9000000E+02	+3.5300000E+02	+3.7041284E+02
166.0	3	+3.4233325E+02	+1.6623276E+01	+3.6000000E+02	+3.2700000E+02	+3.7721020E+02
191.0	3	+3.4800000E+02	+1.1532562E+01	+3.6000000E+02	+3.3700000E+02	+3.8853930E+02
202.0	3	+3.5866650E+02	+5.1316014E+00	+3.6300000E+02	+3.5300000E+02	+3.9352392E+02
230.0	3	+4.6666650E+02	+2.0550750E+01	+4.8000000E+02	+4.4300000E+02	+4.0621240E+02
233.0	6	+4.3616650E+02	+3.4283620E+01	+4.6700000E+02	+3.8700000E+02	+4.0757202E+02
241.0	6	+4.0016650E+02	+4.3462244E+01	+4.5300000E+02	+3.3700000E+02	+4.1119726E+02
250.0	6	+4.1233325E+02	+6.2195391E+01	+4.9700000E+02	+3.3700000E+02	+4.1527563E+02
257.0	6	+3.8650000E+02	+1.7038192E+01	+4.0700000E+02	+3.6300000E+02	+4.1844775E+02
269.0	6	+4.7166650E+02	+9.8319208E+00	+4.8000000E+02	+4.6000000E+02	+4.2388574E+02
273.0	6	+4.7150000E+02	+3.1085366E+01	+4.9300000E+02	+4.1300000E+02	+4.2569824E+02
277.0	6	+4.3950000E+02	+2.3518078E+01	+4.6300000E+02	+4.1000000E+02	+4.2751098E+02
285.0	5	+3.5259985E+02	+2.9466930E+01	+3.9300000E+02	+3.1000000E+02	+4.3113623E+02

STAGE 1.DISCTED MOTOR=0012199.STRESS RELAXATION MODULUS.3 % STRAIN AT 1000 SEC.

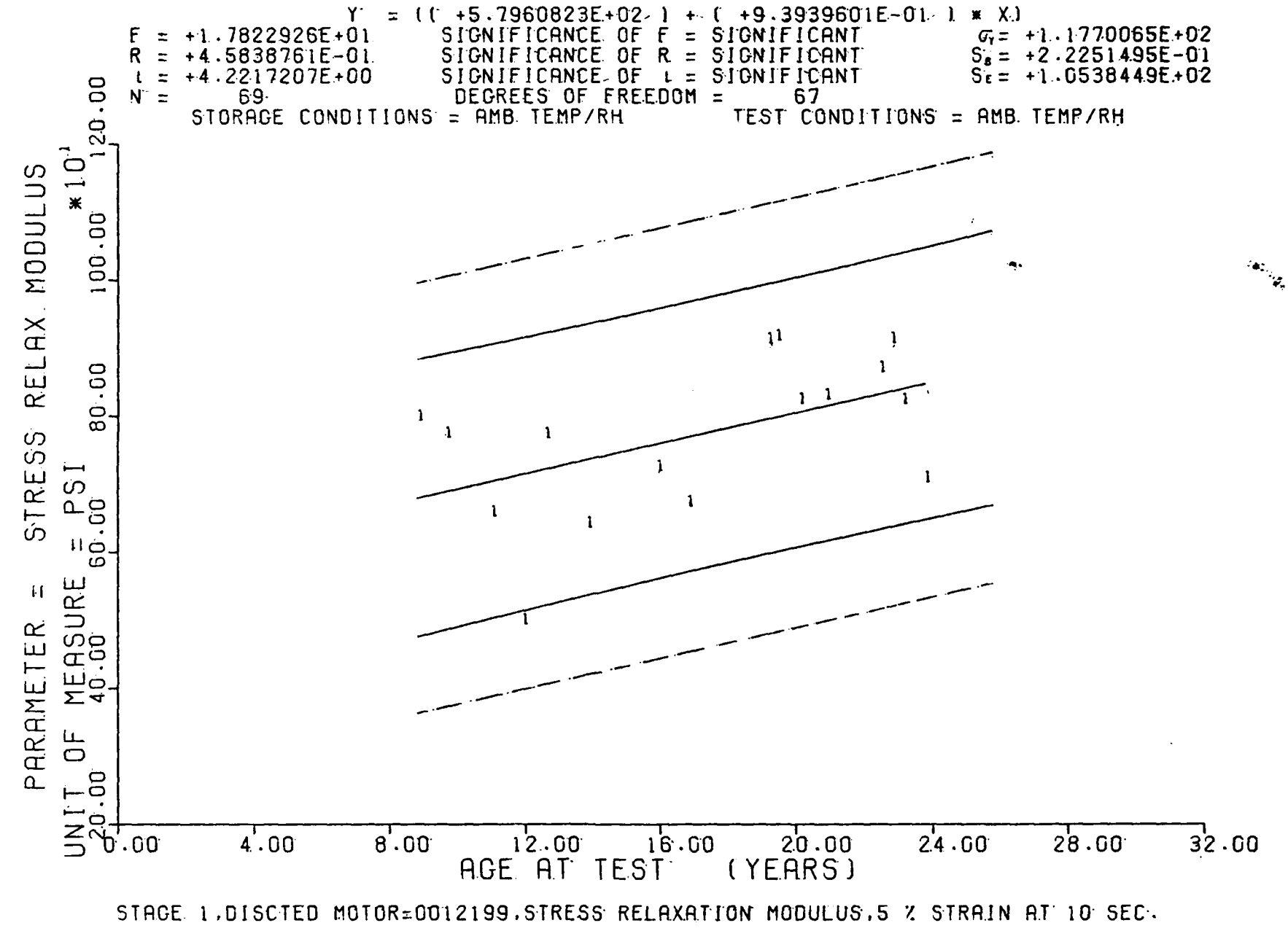

Y = ((+5.7960823E+02) + (+9.3939601E-01) * X)
F = +1.7822926E+01 SIGNIFICANCE OF F = SIGNIFICANT σY = +1.1770065E+02
R = +4.5838761E-01 SIGNIFICANCE OF R = SIGNIFICANT Sβ = +2.2251495E-01
t = +4.2217207E+00 SIGNIFICANCE OF t = SIGNIFICANT Sε = +1.0538449E+02
N = 69 DEGREES OF FREEDOM = 67
STORAGE CONDITIONS = AMB. TEMP/RH TEST CONDITIONS = AMB. TEMP/RH
PARAMETER = STRESS RELAX MODULUS
UNIT OF MEASURE = PSI *10^1
120.00
100.00
80.00
60.00
40.00
20.00
0.00
4.00
8.00
12.00
16.00
20.00
24.00
28.00
32.00
AGE AT TEST (YEARS)
STAGE 1,DISCTED MOTOR=0012199,STRESS RELAXATION MODULUS,5 % STRAIN AT 10 SEC.

Figure 26

**** LINEAR REGRESSION ANALYSIS ****

*** ANALYSIS OF TIME SERIES ***

AGE (MONTHS)	SPECIMENS PER GROUP	MEAN Y	STANDARD DEVIATION	MAXIMUM Y	MINIMUM Y	REGRESSION Y
106.0	3	+7.9400000E+02	+9.4636145E+01	+9.0000000E+02	+7.1800000E+02	+6.7918408E+02
116.0	3	+7.6866650E+02	+6.4291005E+00	+7.7600000E+02	+7.6400000E+02	+6.8857812E+02
132.0	3	+6.5333325E+02	+5.5473717E+01	+7.0000000E+02	+5.9200000E+02	+7.0360839E+02
143.0	3	+4.9466650E+02	+3.4312291E+01	+5.2600000E+02	+4.5800000E+02	+7.1394165E+02
151.0	3	+7.6800000E+02	+9.9999999E+00	+7.7800000E+02	+7.5800000E+02	+7.2145703E+02
166.0	3	+6.3666650E+02	+4.5003703E+01	+6.7200000E+02	+5.8600000E+02	+7.3554785E+02
191.0	3	+7.2000000E+02	+1.2489995E+01	+7.3000000E+02	+7.0600000E+02	+7.5903271E+02
202.0	3	+6.6800000E+02	+1.3114877E+01	+6.8200000E+02	+6.5600000E+02	+7.6936621E+02
230.0	3	+9.0733325E+02	+3.8279672E+01	+9.5000000E+02	+8.7600000E+02	+7.9566918E+02
233.0	6	+9.1200000E+02	+4.4488200E+01	+9.7200000E+02	+8.5800000E+02	+7.9848730E+02
241.0	6	+8.1933325E+02	+9.9032654E+01	+9.7800000E+02	+7.1000000E+02	+8.0600244E+02
250.0	6	+8.2566650E+02	+8.7703287E+01	+9.7200000E+02	+7.1600000E+02	+8.1445703E+02
269.0	6	+8.6566650E+02	+3.9827963E+01	+9.4000000E+02	+8.3600000E+02	+8.3230566E+02
273.0	6	+9.0800000E+02	+6.2992062E+01	+9.9800000E+02	+8.3800000E+02	+8.3606323E+02
277.0	6	+8.1833325E+02	+3.2284155E+01	+8.5800000E+02	+7.6600000E+02	+8.3982080E+02
285.0	6	+7.0333325E+02	+5.6705085E+01	+7.7400000E+02	+6.4000000E+02	+8.4733593E+02

STAGE 1,DISCTED MOTOR=0012199,STRESS RELAXATION MODULUS,5 % STRAIN AT 10 SEC.

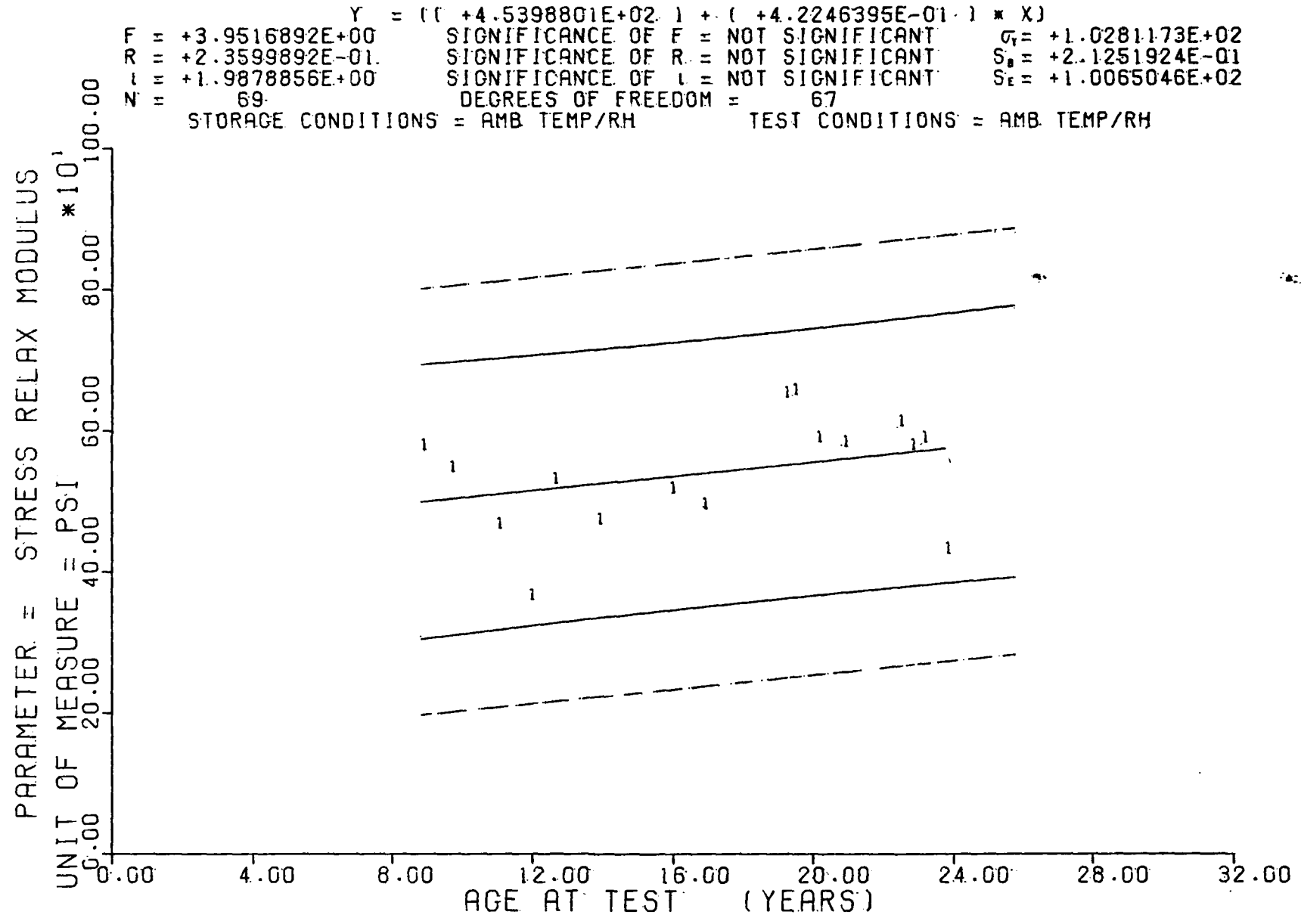

Y = ((+4.5398801E+02) + (+4.2246395E-01) * X)
F = +3.9516892E+00 SIGNIFICANCE OF F = NOT SIGNIFICANT σT = +1.0281173E+02
R = +2.3599892E-01 SIGNIFICANCE OF R = NOT SIGNIFICANT Sb = +2.1251924E-01
t = +1.9878856E+00 SIGNIFICANCE OF t = NOT SIGNIFICANT SE = +1.0065046E+02
N = 69 DEGREES OF FREEDOM = 67
STORAGE CONDITIONS = AMB TEMP/RH TEST CONDITIONS = AMB TEMP/RH
PARAMETER = STRESS RELAX MODULUS
UNIT OF MEASURE = PSI *10¹
100.00
80.00
60.00
40.00
20.00
0.00
0.00
4.00
8.00
12.00
16.00
20.00
24.00
28.00
32.00
AGE AT TEST (YEARS)
STAGE 1,DISCTED MOTOR=0012199,STRESS RELAXATION MODULUS,5 % STRAIN AT 50 SEC.

Figure 27

**** LINEAR REGRESSION ANALYSIS ****

*** ANALYSIS OF TIME SERIES ***

AGE (MONTHS)	SPECIMENS PER GROUP	MEAN Y	STANDARD DEVIATION	MAXIMUM Y	MINIMUM Y	REGRESSION Y
106.0	3	+5.7333325E+02	+6.7121779E+01	+6.4800000E+02	+5.1800000E+02	+4.9876904E+02
116.0	3	+5.4200000E+02	+1.2489995E+01	+5.5600000E+02	+5.3200000E+02	+5.0299365E+02
132.0	3	+4.6200000E+02	+4.1327956E+01	+4.9600000E+02	+4.1600000E+02	+5.0975317E+02
143.0	3	+3.6066650E+02	+2.3180451E+01	+3.8200000E+02	+3.3600000E+02	+5.1440014E+02
151.0	3	+5.2533325E+02	+8.0829037E+00	+5.3400000E+02	+5.1800000E+02	+5.1778002E+02
166.0	3	+4.6800000E+02	+2.6457513E+01	+4.8800000E+02	+4.3800000E+02	+5.2411694E+02
191.0	3	+5.1266650E+02	+5.7735026E+00	+5.1600000E+02	+5.0600000E+02	+5.3467846E+02
202.0	3	+4.9000000E+02	+5.9999999E+00	+4.9600000E+02	+4.8400000E+02	+5.3932568E+02
230.0	3	+6.4800000E+02	+1.4422205E+01	+6.6400000E+02	+6.3600000E+02	+5.5115454E+02
233.0	6	+6.5166650E+02	+2.8408918E+01	+6.9000000E+02	+6.7000000E+02	+5.5242211E+02
241.0	6	+5.8433325E+02	+8.9901427E+01	+7.3200000E+02	+4.9000000E+02	+5.5580175E+02
250.0	6	+5.7800000E+02	+6.5590484E+01	+6.8600000E+02	+4.9000000E+02	+5.5960400E+02
269.0	6	+6.0733325E+02	+2.5382408E+01	+6.5200000E+02	+5.8400000E+02	+5.6763061E+02
273.0	6	+5.7333325E+02	+6.6677332E+01	+6.8200000E+02	+5.1800000E+02	+5.6932055E+02
277.0	6	+5.8433325E+02	+2.3576824E+01	+6.1200000E+02	+5.4600000E+02	+5.7101049E+02
285.0	6	+4.2666650E+02	+2.0765612E+02	+5.6000000E+02	+1.0000000E+01	+5.7439013E+02

STAGE 1.DISCTED MOTOR=0012199,STRESS RELAXATION MODULUS,5 % STRAIN AT 50 SEC.

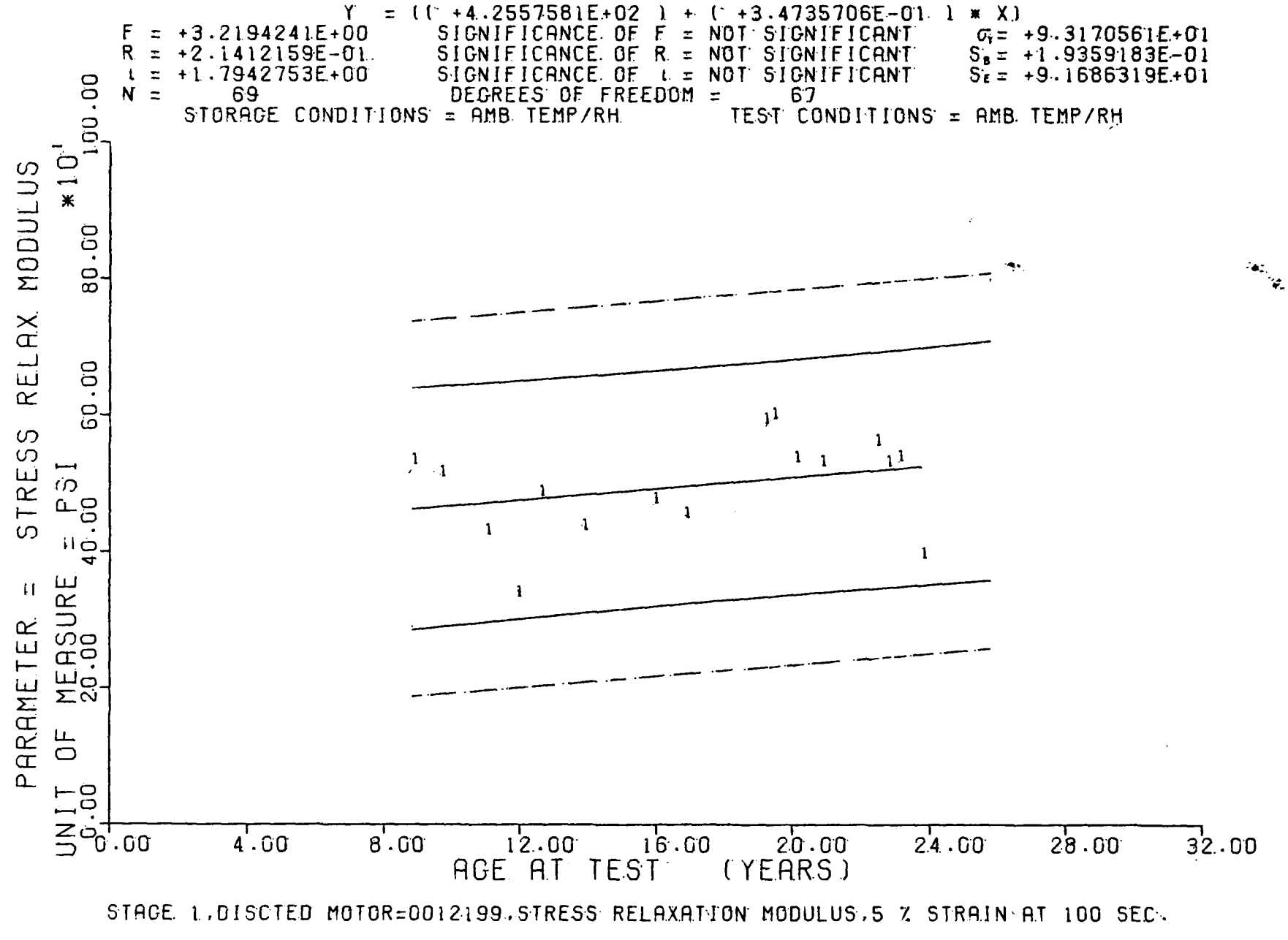

Y = (+4.2557581E+02) + (+3.4735706E-01) * X)
F = +3.2194241E+00 SIGNIFICANCE OF F = NOT SIGNIFICANT σ = +9.3170561E+01
R = +2.1412159E-01 SIGNIFICANCE OF R = NOT SIGNIFICANT S_B = +1.9359183E-01
t = +1.7942753E+00 SIGNIFICANCE OF t = NOT SIGNIFICANT S_E = +9.1686319E+01
N = 69 DEGREES OF FREEDOM = 67
STORAGE CONDITIONS = AMB TEMP/RH TEST CONDITIONS = AMB TEMP/RH
PARAMETER = STRESS RELAX MODULUS
UNIT OF MEASURE = PSI *10^1
100.00
80.00
60.00
40.00
20.00
0.00
0.00
4.00
8.00
12.00
16.00
20.00
24.00
28.00
32.00
AGE AT TEST (YEARS)
STAGE 1,DISCTED MOTOR=0012199,STRESS RELAXATION MODULUS,5 % STRAIN AT 100 SEC

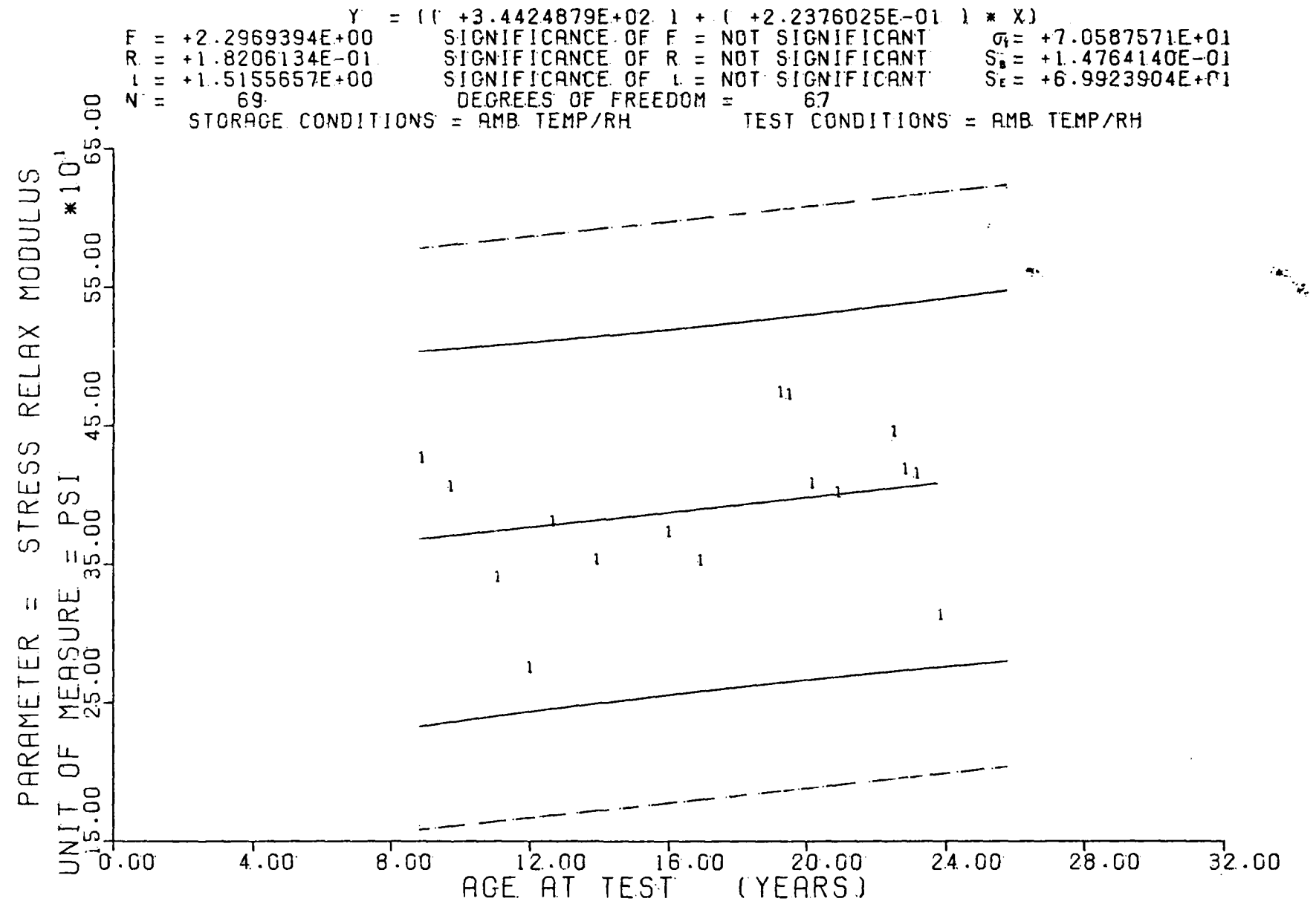
Figure 28

**** LINEAR REGRESSION ANALYSIS ****

*** ANALYSIS OF TIME SERIES ***

AGE (MONTHS)	SPECIMENS PER GROUP	MEAN Y	STANDARD DEVIATION	MAXIMUM Y	MINIMUM Y	REGRESSION Y
106.0	3	+5.2866650E+02	+6.2139627E+01	+5.9800000E+02	+4.7800000E+02	+4.6239550E+02
116.0	3	+5.1066650E+02	+1.1547005E+01	+5.2400000E+02	+5.0400000E+02	+4.6586914E+02
132.0	3	+4.2600000E+02	+3.7469987E+01	+4.5600000E+02	+3.8400000E+02	+4.7142675E+02
143.0	3	+3.3466650E+02	+2.1197484E+01	+3.5400000E+02	+3.1200000E+02	+4.7524780E+02
151.0	3	+4.8200000E+02	+7.2111025E+00	+4.9000000E+02	+4.7600000E+02	+4.7802661E+02
166.0	3	+4.3266650E+02	+2.5006665E+01	+4.5000000E+02	+4.0400000E+02	+4.8323706E+02
191.0	3	+4.7200000E+02	+3.4641016E+00	+4.7400000E+02	+4.6800000E+02	+4.9192089E+02
202.0	3	+4.5066650E+02	+6.1101009E+00	+4.5600000E+02	+4.4400000E+02	+4.9574194E+02
230.0	3	+5.8866650E+02	+1.5143755E+01	+6.0600000E+02	+5.7800000E+02	+5.0546777E+02
233.0	6	+5.9666650E+02	+2.4451312E+01	+6.2800000E+02	+5.7600000E+02	+5.0651000E+02
241.0	6	+5.3266650E+02	+8.2060140E+01	+6.6800000E+02	+4.4600000E+02	+5.0928881E+02
250.0	6	+5.2666650E+02	+6.1118464E+01	+5.2400000E+02	+4.4200000E+02	+5.1241503E+02
269.0	6	+5.5766650E+02	+2.1106081E+01	+5.9200000E+02	+5.3600000E+02	+5.1901464E+02
273.0	6	+5.2600000E+02	+5.4184868E+01	+6.1600000E+02	+4.8200000E+02	+5.2040405E+02
277.0	6	+5.3433325E+02	+2.1704070E+01	+5.5800000E+02	+4.9800000E+02	+5.2179370E+02
285.0	6	+3.9166650E+02	+1.9247198E+02	+5.1600000E+02	+6.0000000E+00	+5.2457250E+02

STAGE 1,DISCTED MOTOR=0012199,STRESS RELAXATION MODULUS,5 % STRAIN AT 100 SEC.



STAGE 1,DISCTED MOTOR=0012199,STRESS RELAXATION MODULUS,5 % STRAIN AT 1000 SEC.

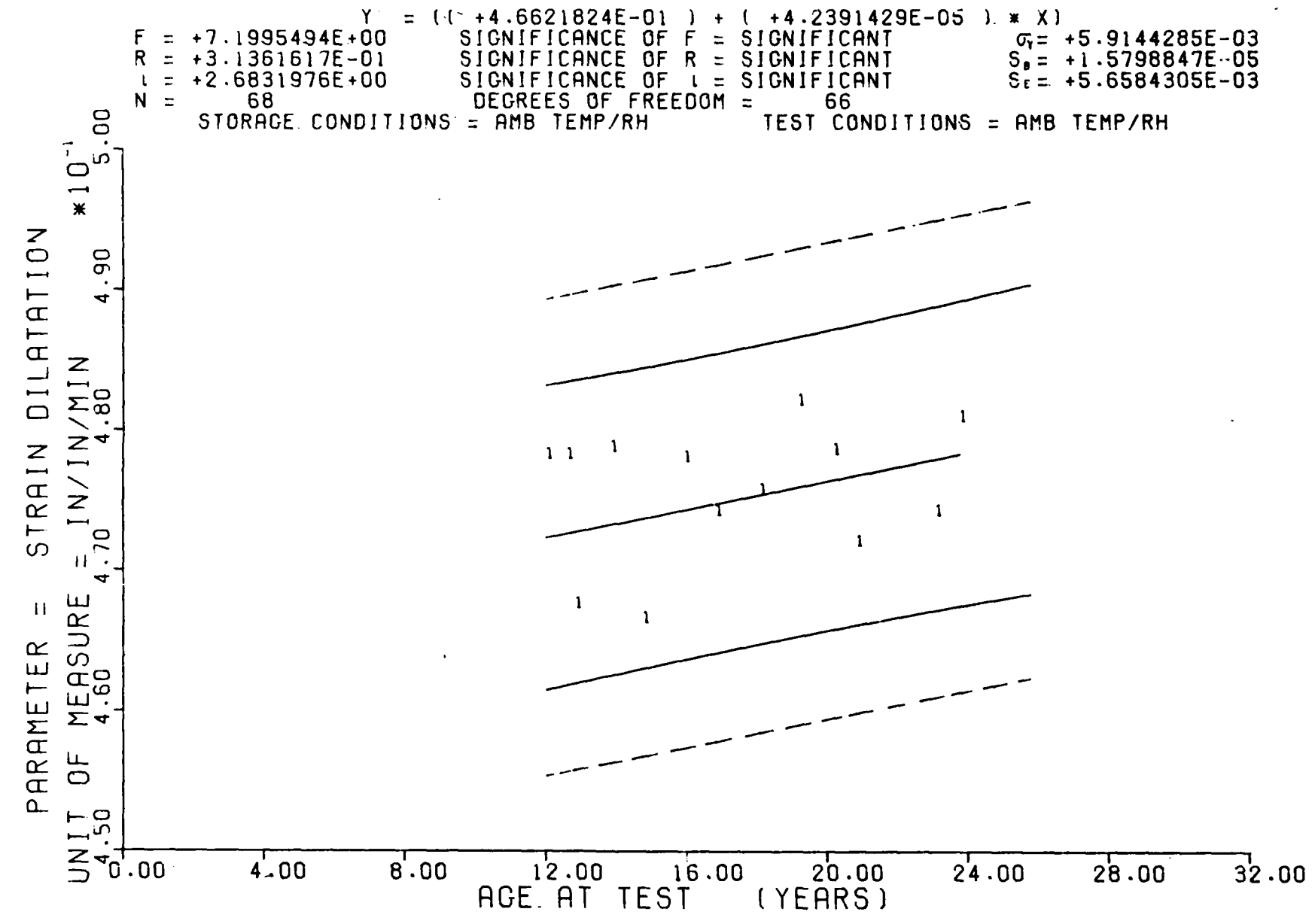
Figure 29

**** LINEAR REGRESSION ANALYSIS ****

*** ANALYSIS OF TIME SERIES ***

AGE (MONTHS)	SPECIMENS PER GROUP	MEAN Y	STANDARD DEVIATION	MAXIMUM Y	MINIMUM Y	REGRESSION Y
106.0	3	+4.2333326E+02	+5.0649119E+01	+4.7800000E+02	+3.7800000E+02	+3.6796728E+02
116.0	3	+4.0266650E+02	+1.3316656E+01	+4.1800000E+02	+3.9400000E+02	+3.7020483E+02
132.0	3	+3.8733326E+02	+2.5716402E+01	+3.9600000E+02	+3.6800000E+02	+3.7378491E+02
143.0	3	+2.7200000E+02	+1.0078784E+01	+2.9000000E+02	+2.5200000E+02	+3.7624633E+02
151.0	3	+3.7733326E+02	+7.0237691E+00	+3.8400000E+02	+3.7000000E+02	+3.7803637E+02
166.0	3	+3.5000000E+02	+1.0078784E+01	+3.6200000E+02	+3.2800000E+02	+3.8139282E+02
191.0	3	+3.7000000E+02	+3.4641016E+00	+3.7400000E+02	+3.6800000E+02	+3.8698681E+02
202.0	3	+3.4933326E+02	+1.1547005E+00	+3.5000000E+02	+3.4800000E+02	+3.8944824E+02
230.0	3	+4.7066650E+02	+8.3266639E+00	+4.8000000E+02	+4.6400000E+02	+3.9571362E+02
233.0	6	+4.6933326E+02	+2.4055491E+01	+5.0400000E+02	+4.4400000E+02	+3.9638476E+02
241.0	6	+4.8500000E+02	+5.7267791E+01	+5.0200000E+02	+3.4600000E+02	+3.9817480E+02
250.0	6	+3.9866650E+02	+4.8293546E+01	+4.7400000E+02	+3.3000000E+02	+4.0018872E+02
269.0	6	+4.4233326E+02	+1.6268579E+01	+4.6600000E+02	+4.2400000E+02	+4.0444018E+02
273.0	6	+4.1500000E+02	+3.0377623E+01	+4.6800000E+02	+3.8600000E+02	+4.0533520E+02
277.0	6	+4.1200000E+02	+1.9514097E+01	+4.3400000E+02	+3.8200000E+02	+4.0623022E+02
295.0	6	+3.1000000E+02	+1.4599178E+02	+4.0600000E+02	+1.8000000E+01	+4.0802026E+02

STAGE 1.DISCTED MOTOR=0012199,STRESS RELAXATION MODULUS,5 % STRAIN AT 1000 SEC.



STAGE 1,DISSECTED MOTOR=0012199,STRAIN DILATATION,10% STRAIN.

Figure 30

**** LINEAR REGRESSION ANALYSIS ****

*** ANALYSIS OF TIME SERIES ***

AGE (MONTHS)	SPECIMENS PER GROUP	MEAN Y	STANDARD DEVIATION	MAXIMUM Y	MINIMUM Y	REGRESSION Y
144.0	2	+4.7799992E-01	+2.8323377E-03	+4.7999995E-01	+4.7599995E-01	+4.7232258E-01
151.0	1	+4.7799998E-01	+0.0000000E+07	+4.7799998E-01	+4.7799998E-01	+4.7261929E-01
154.0	6	+4.6733295E-01	+3.4713997E-03	+4.7299998E-01	+4.6399998E-01	+4.7274649E-01
166.0	6	+4.7849971E-01	+2.7518115E-03	+4.8199999E-01	+4.7399997E-01	+4.7325521E-01
177.0	6	+4.6633291E-01	+5.4162844E-03	+4.7199994E-01	+4.5799994E-01	+4.7372150E-01
191.0	6	+4.7783309E-01	+5.2691221E-03	+4.8199996E-01	+4.6999998E-01	+4.7431498E-01
202.0	5	+4.7399979E-01	+2.0906766E-03	+4.7599995E-01	+4.6999996E-01	+4.7478127E-01
217.0	6	+4.7549974E-01	+2.4114752E-03	+4.7799998E-01	+4.7199994E-01	+4.7541713E-01
230.0	6	+4.8183298E-01	+5.4621924E-04	+4.8199999E-01	+4.8099994E-01	+4.7596824E-01
242.0	6	+4.7833311E-01	+2.9121349E-03	+4.8199999E-01	+4.7499996E-01	+4.7647696E-01
250.0	5	+4.7179961E-01	+8.3086975E-03	+4.8199999E-01	+4.6299999E-01	+4.7681605E-01
277.0	6	+4.7399961E-01	+2.2636143E-03	+4.7599995E-01	+4.7199994E-01	+4.7796064E-01
295.0	6	+4.8066627E-01	+1.4686869E-03	+4.8199999E-01	+4.7899997E-01	+4.7829979E-01

74

STAGE 1.DISSECTED MOTOR=001219.STRAIN DILATATION.10% STRAIN.

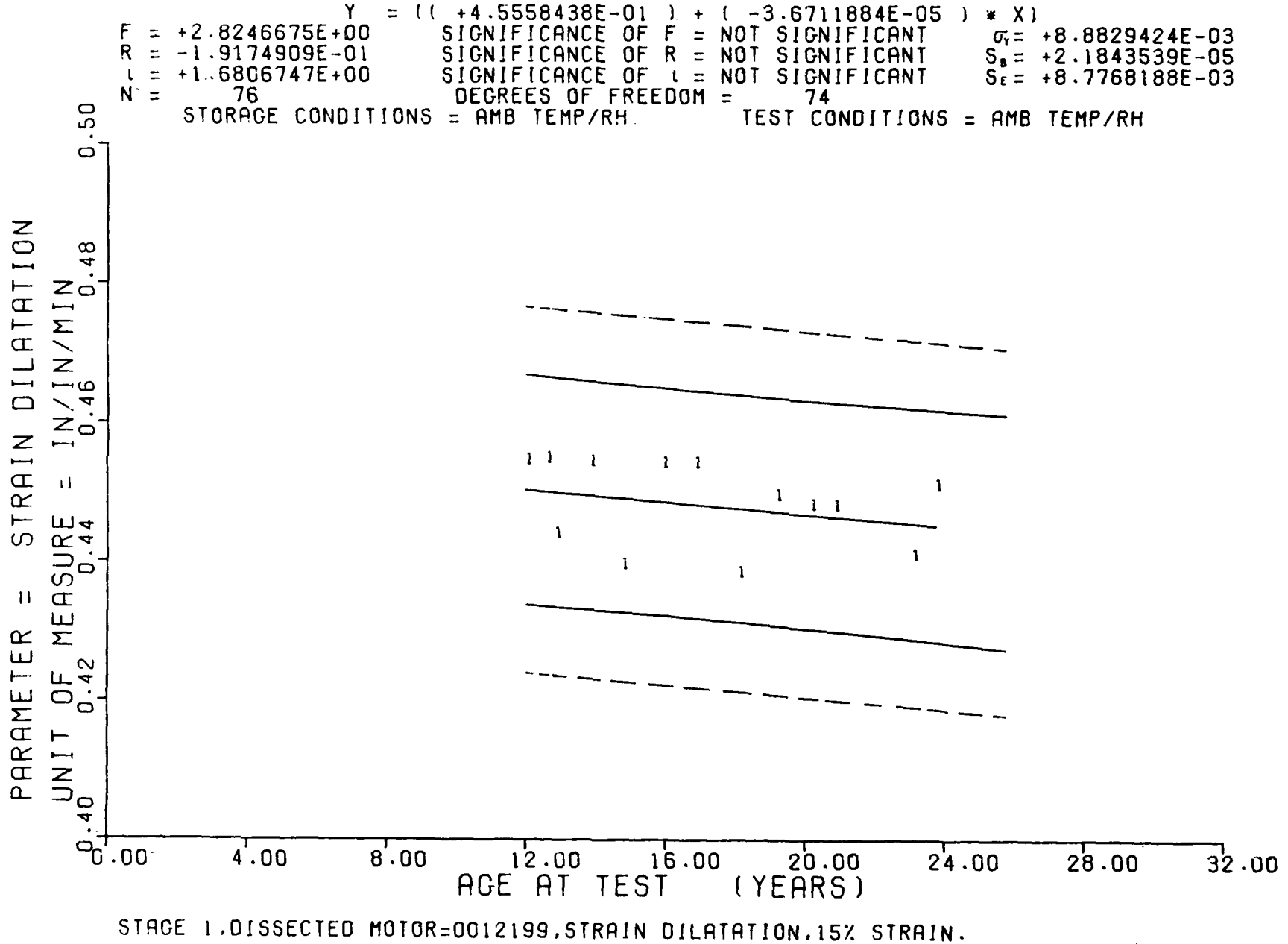

Y = ((+4.5558438E-01) + (-3.6711884E-05) * X)
F = +2.8246675E+00 SIGNIFICANCE OF F = NOT SIGNIFICANT σY = +8.8829424E-03
R = -1.9174909E-01 SIGNIFICANCE OF R = NOT SIGNIFICANT SB = +2.1843539E-05
t = +1.6806747E+00 SIGNIFICANCE OF t = NOT SIGNIFICANT SE = +8.7768188E-03
N = 76 DEGREES OF FREEDOM = 74
STORAGE CONDITIONS = AMB TEMP/RH TEST CONDITIONS = AMB TEMP/RH
PARAMETER = STRAIN DILATATION
UNIT OF MEASURE = IN/IN/MIN
0.50
0.48
0.46
0.44
0.42
0.40
0.00
4.00
8.00
12.00
16.00
20.00
24.00
28.00
32.00
AGE AT TEST (YEARS)
STAGE 1,DISSECTED MOTOR=0012199,STRAIN DILATATION,15% STRAIN.

Figure 31

**** LINEAR REGRESSION ANALYSIS ****

*** ANALYSIS OF TIME SERIES ***

AGE (MONTHS)	SPECIMENS PER GROUP	MEAN Y	STANDARD DEVIATION	MAXIMUM Y	MINIMUM Y	REGRESSION Y
144.0	8	+4.5412468E-01	+1.0419018E-02	+4.6299999E-01	+4.3799996E-01	+4.5029783E-01
151.0	7	+4.5433330E-01	+4.9314463E-03	+4.5999997E-01	+4.5099997E-01	+4.5004087E-01
154.0	6	+4.4349968E-01	+4.3433085E-03	+4.5099997E-01	+4.3799996E-01	+4.4993072E-01
156.0	6	+4.5383310E-01	+1.9774679E-03	+4.5699995E-01	+4.5199996E-01	+4.4949018E-01
177.0	6	+4.3899965E-01	+6.2412318E-03	+4.4699996E-01	+4.2999994E-01	+4.4908636E-01
191.0	6	+4.5366632E-01	+5.4103430E-03	+4.5899999E-01	+4.4399994E-01	+4.4857239E-01
202.0	6	+4.5366632E-01	+1.7723249E-03	+4.5599997E-01	+4.5099997E-01	+4.4816857E-01
217.0	6	+4.3783295E-01	+5.0588837E-03	+4.4399994E-01	+4.3199998E-01	+4.4761788E-01
230.0	6	+4.4999970E-01	+4.4268571E-03	+4.5699995E-01	+4.4399994E-01	+4.4714063E-01
242.0	6	+4.4766628E-01	+2.9580833E-03	+4.5099997E-01	+4.4299995E-01	+4.4670009E-01
250.0	5	+4.4759958E-01	+1.9840634E-02	+4.8199999E-01	+4.3399995E-01	+4.4640636E-01
277.0	6	+4.4033300E-01	+5.6523272E-03	+4.4999998E-01	+4.3499994E-01	+4.4541513E-01
295.0	6	+4.5049965E-01	+1.2482488E-03	+4.5199996E-01	+4.4899994E-01	+4.4512146E-01

76

STAGE 1,DISSECTED MOTOR=0012199,STRAIN DILATATION,15% STRAIN.

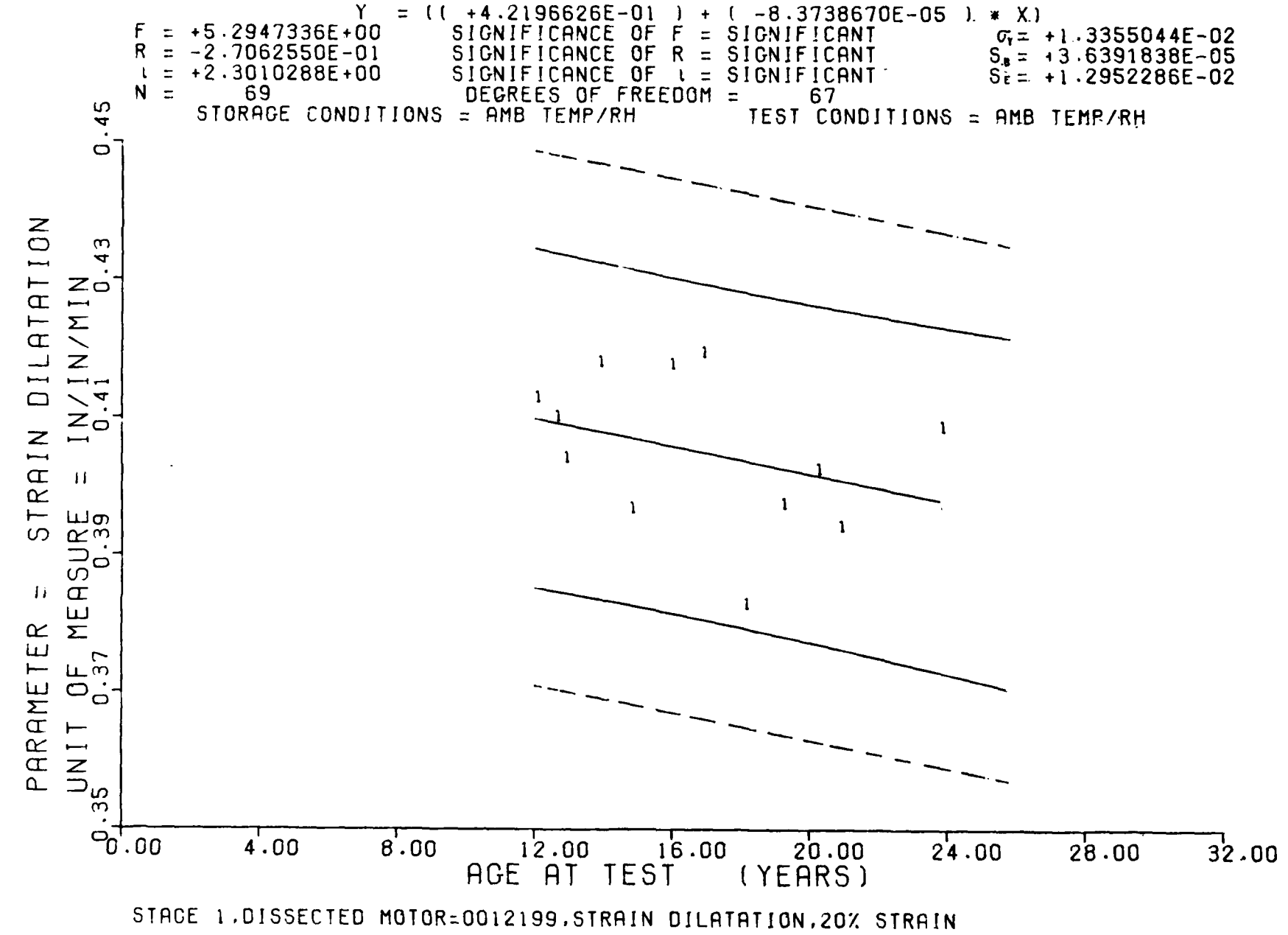

Y = ((+4.2196626E-01) + (-8.3738670E-05). * X.)
F = +5.2947336E+00 SIGNIFICANCE OF F = SIGNIFICANT
R = -2.7062550E-01 SIGNIFICANCE OF R = SIGNIFICANT
N = 69 DEGREES OF FREEDOM = 67
STORAGE CONDITIONS = AMB TEMP/RH TEST CONDITIONS = AMB TEMP/RH
PARAMETER = STRAIN DILATATION
UNIT OF MEASURE = IN/IN/MIN
0.45
0.43
0.41
0.39
0.37
0.35
0.00
4.00
8.00
12.00
16.00
20.00
24.00
28.00
32.00
AGE AT TEST (YEARS)
STAGE 1,DISSECTED MOTOR=0012199,STRAIN DILATATION,20% STRAIN

Figure 32

**** LINEAR REGRESSION ANALYSIS ****

*** ANALYSIS OF TIME SERIES ***

AGE (MONTHS)	SPECIMENS PER GROUP	MEAN Y	STANDARD DEVIATION	MAXIMUM Y	MINIMUM Y	REGRESSION Y
144.0	8	+4.1237461E-01	+1.9156288E-02	+4.2899996E-01	+3.8099998E-01	+4.0990787E-01
151.0	3	+4.0966635E-01	+5.5392133E-03	+4.1499996E-01	+4.0399998E-01	+4.0932172E-01
154.0	6	+4.0366631E-01	+4.4858529E-03	+4.1099995E-01	+3.9799994E-01	+4.0907049E-01
166.0	6	+4.1749954E-01	+4.6281727E-03	+4.2499995E-01	+4.1299998E-01	+4.0806561E-01
177.0	6	+3.9633303E-01	+8.6318093E-03	+4.1099995E-01	+3.8799995E-01	+4.0714448E-01
191.0	6	+4.1716635E-01	+3.0808092E-03	+4.2099994E-01	+4.1199994E-01	+4.0597212E-01
202.0	6	+4.1883307E-01	+1.9760160E-03	+4.2199999E-01	+4.1699999E-01	+4.0505105E-01
217.0	6	+3.8233292E-01	+6.1783514E-03	+3.8999998E-01	+3.7399995E-01	+4.0379494E-01
230.0	6	+3.9699965E-01	+7.0050878E-03	+4.0899997E-01	+3.8599999E-01	+4.0270632E-01
242.0	6	+4.0199977E-01	+4.4452246E-03	+4.0799999E-01	+3.9599996E-01	+4.0170150E-01
250.0	4	+3.9374971E-01	+9.3368602E-03	+4.0599995E-01	+3.8599997E-01	+4.0103155E-01
285.0	6	+4.0816640E-01	+3.0964535E-03	+4.1199994E-01	+4.0299999E-01	+3.9810073E-01

STAGE 1,DISSECTED MOTOR=0012199,STRAIN DILATATION,20% STRAIN

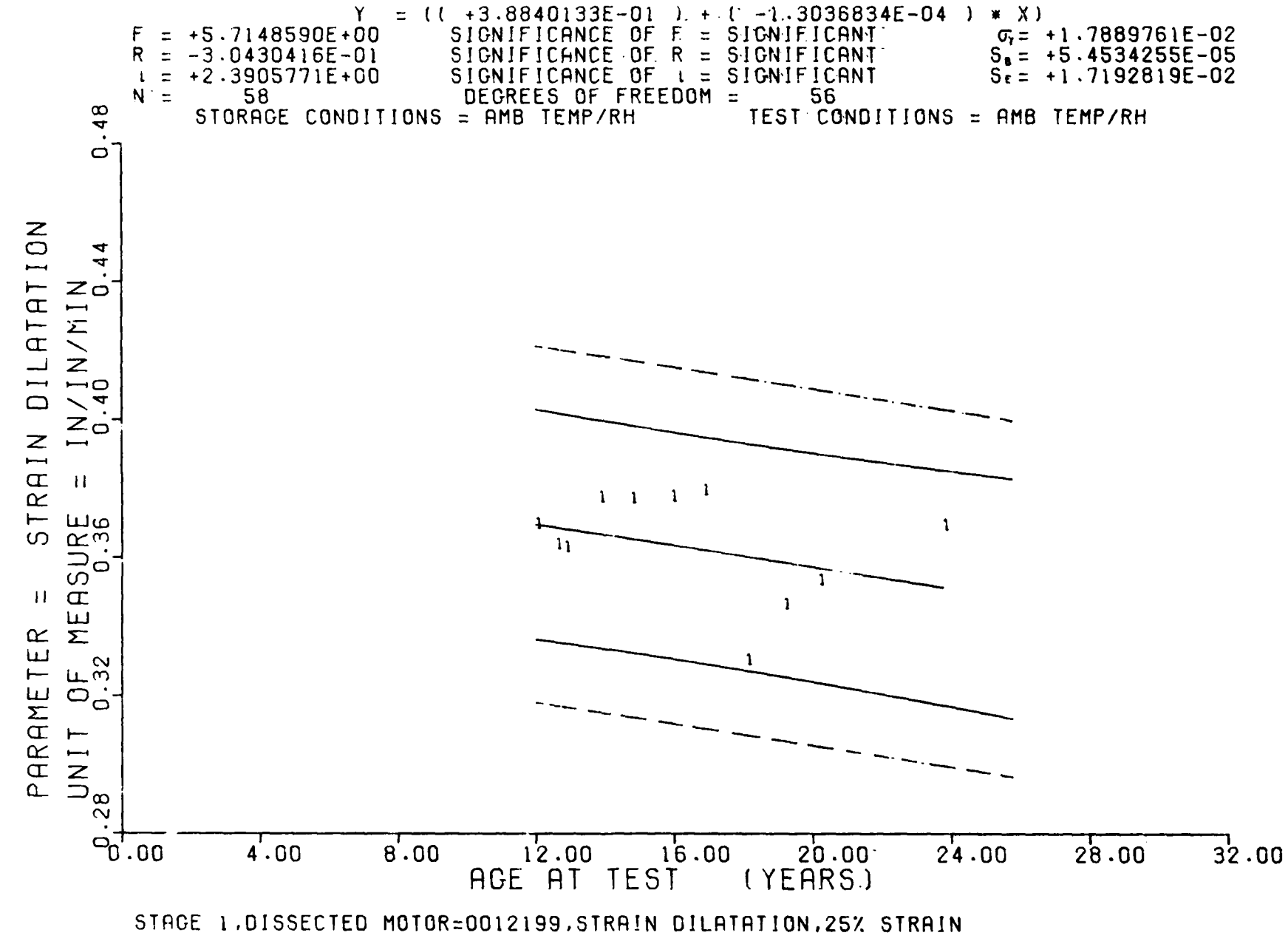

Y = ((+3.8840133E-01) + (-1.3036834E-04) * X)
F = +5.7148590E+00 SIGNIFICANCE OF F = SIGNIFICANT σ_Y = +1.7889761E-02
R = -3.0430416E-01 SIGNIFICANCE OF R = SIGNIFICANT S_B = +5.4534255E-05
ι = +2.3905771E+00 SIGNIFICANCE OF ι = SIGNIFICANT S_ε = +1.7192819E-02
N = 58 DEGREES OF FREEDOM = 56
STORAGE CONDITIONS = AMB TEMP/RH TEST CONDITIONS = AMB TEMP/RH
PARAMETER = STRAIN DILATATION
UNIT OF MEASURE = IN/IN/MIN
0.48
0.44
0.40
0.36
0.32
0.28
0.00
4.00
8.00
12.00
16.00
20.00
24.00
28.00
32.00
AGE AT TEST (YEARS)
STAGE 1,DISSECTED MOTOR=0012199,STRAIN DILATATION,25% STRAIN

Figure 33

**** LINEAR REGRESSION ANALYSIS ****

*** ANALYSIS OF TIME SERIES ***

AGE (MONTHS)	SPECIMENS PER GROUP	MEAN Y	STANDARD DEVIATION	MAXIMUM Y	MINIMUM Y	REGRESSION Y
144.0	6	+3.6866647E-01	+2.1023628E-02	+3.8899999E-01	+3.4199994E-01	+3.6962825E-01
151.0	3	+3.6266642E-01	+6.4448629E-03	+3.6999994E-01	+3.5799998E-01	+3.6871570E-01
154.0	5	+3.6179959E-01	+6.9278059E-03	+3.6999994E-01	+3.5099995E-01	+3.6832457E-01
166.0	6	+3.7633287E-01	+5.3467959E-03	+3.8399994E-01	+3.6999994E-01	+3.6676013E-01
177.0	3	+3.7599974E-01	+3.0380141E-03	+3.7899994E-01	+3.7299996E-01	+3.6532610E-01
191.0	6	+3.7649977E-01	+3.4119723E-03	+3.8199996E-01	+3.7199997E-01	+3.6350095E-01
202.0	6	+3.7833309E-01	+2.2018210E-03	+3.8199996E-01	+3.7599998E-01	+3.6206692E-01
217.0	6	+3.2916641E-01	+6.0602240E-03	+3.3699995E-01	+3.2099997E-01	+3.6011135E-01
230.0	6	+3.4516650E-01	+9.4580563E-03	+3.5999995E-01	+3.3399999E-01	+3.5841655E-01
242.0	6	+3.5216617E-01	+5.7751678E-03	+3.6099994E-01	+3.4499996E-01	+3.5685217E-01
285.0	5	+3.6819970E-01	+1.4557006E-02	+3.8999998E-01	+3.5499995E-01	+3.5124629E-01

08

STAGE 1.DISSECTED MOTOR=0012199.STRAIN DILATATION.25% STRAIN

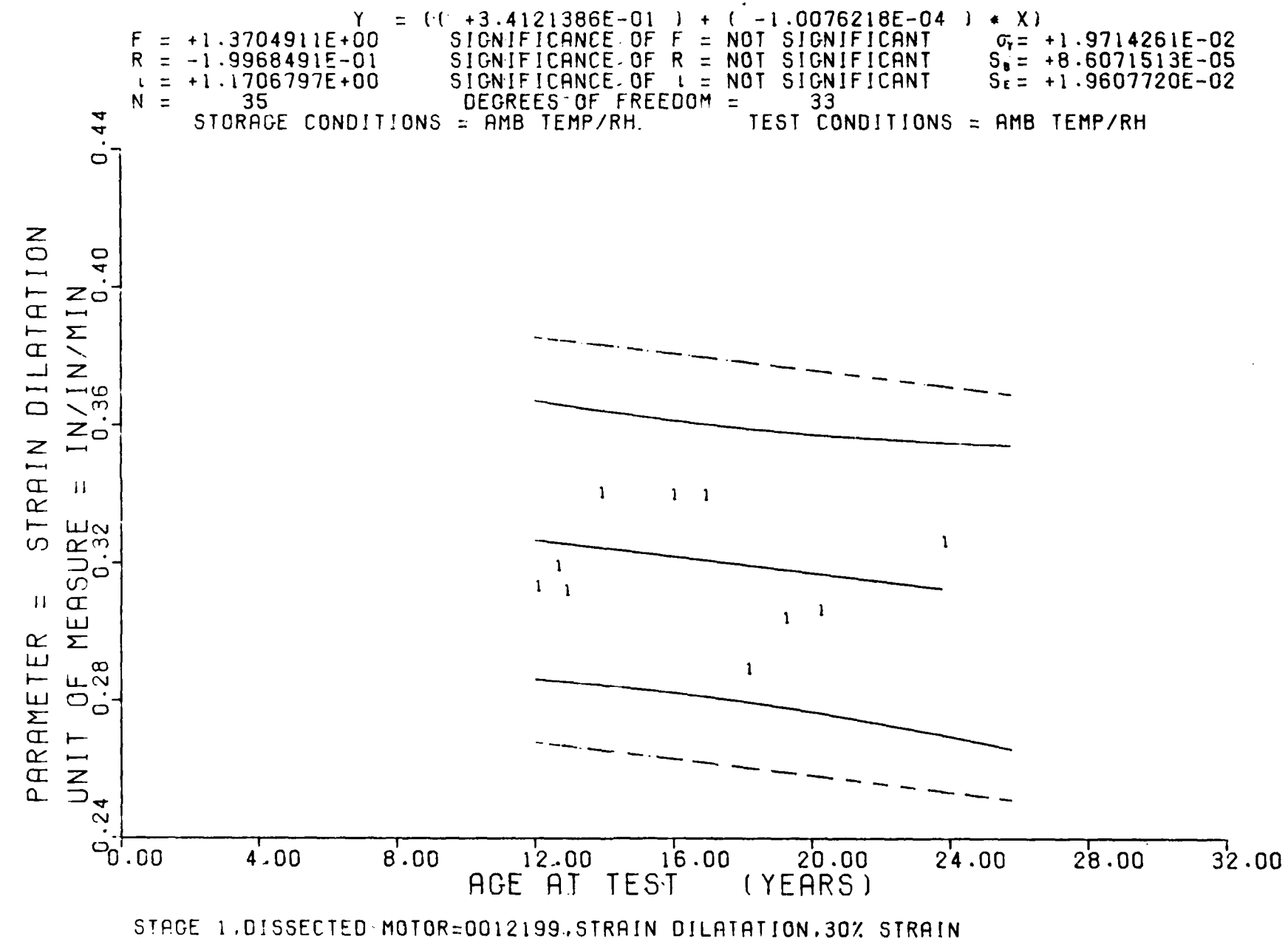

Y = ((+3.4121386E-01) + (-1.0076218E-04) * X)
F = +1.3704911E+00 SIGNIFICANCE OF F = NOT SIGNIFICANT σY = +1.9714261E-02
R = -1.9968491E-01 SIGNIFICANCE OF R = NOT SIGNIFICANT SB = +8.6071513E-05
I = +1.1706797E+00 SIGNIFICANCE OF I = NOT SIGNIFICANT SE = +1.9607720E-02
N = 35 DEGREES OF FREEDOM = 33
STORAGE CONDITIONS = AMB TEMP/RH. TEST CONDITIONS = AMB TEMP/RH
PARAMETER = STRAIN DILATATION
UNIT OF MEASURE = IN/IN/MIN
0.44
0.40
0.36
0.32
0.28
0.24
0.00
4.00
8.00
12.00
16.00
20.00
24.00
28.00
32.00
AGE AT TEST (YEARS)
STAGE 1,DISSECTED MOTOR=0012199,STRAIN DILATATION,30% STRAIN

Figure 34

**** LINEAR REGRESSION ANALYSIS ****

*** ANALYSIS OF TIME SERIES ***

AGE (MONTHS)	SPECIMENS PER GROUP	MEAN Y	STANDARD DEVIATION	MAXIMUM Y	MINIMUM Y	REGRESSION Y
144.0	2	+3.1199991E-01	+3.5355309E-02	+3.3699995E-01	+2.8699994E-01	+3.2670408E-01
151.0	3	+3.1799995E-01	+6.9998662E-03	+3.2599997E-01	+3.1299996E-01	+3.2599872E-01
154.0	4	+3.1074976E-01	+9.5438115E-03	+3.1899994E-01	+2.9699999E-01	+3.2569646E-01
166.0	5	+3.3919960E-01	+1.1893603E-02	+3.5299998E-01	+3.2699996E-01	+3.2448732E-01
191.0	6	+3.3866626E-01	+1.1106352E-02	+3.5999995E-01	+3.2899999E-01	+3.2196825E-01
202.0	4	+3.3849978E-01	+3.1333812E-03	+3.4299999E-01	+3.3599996E-01	+3.2085984E-01
217.0	2	+2.8799992E-01	+4.2427665E-03	+2.9099994E-01	+2.8499996E-01	+3.1934845E-01
230.0	3	+3.0266660E-01	+8.9616771E-03	+3.1299996E-01	+2.9699999E-01	+3.1803852E-01
242.0	4	+3.0499982E-01	+7.4010638E-03	+3.1399995E-01	+2.9599994E-01	+3.1682938E-01
295.0	2	+3.2499992E-01	+2.1213600E-02	+3.3999997E-01	+3.0999994E-01	+3.1249660E-01

STAGE 1,DISSECTED MOTOR=0012199,STRAIN DILATATION,30% STRAIN

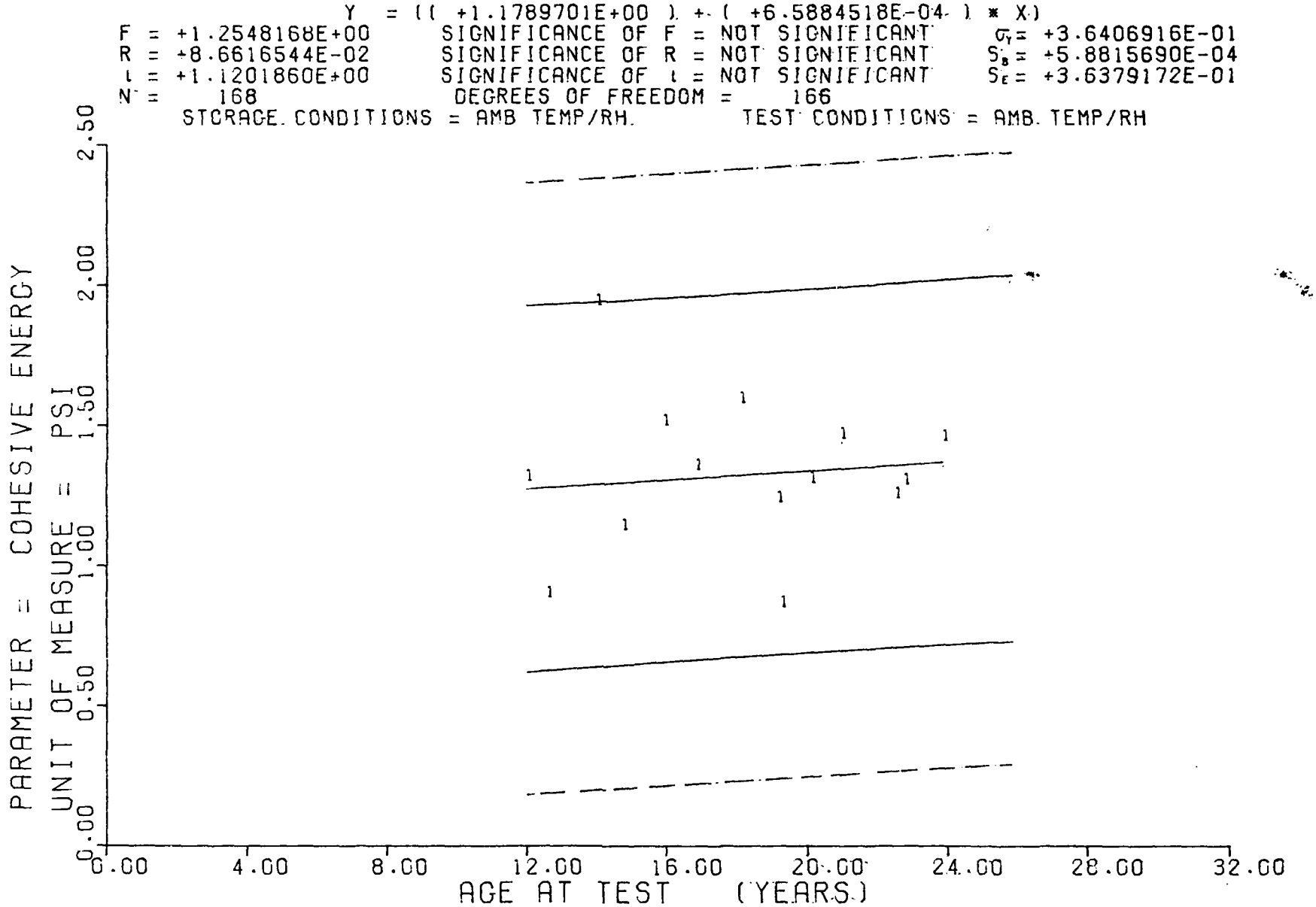

Y = ((+1.1789701E+00) +- (+6.5884518E-04) * X)
F = +1.2548168E+00 SIGNIFICANCE OF F = NOT SIGNIFICANT σY = +3.6406916E-01
R = +8.6616544E-02 SIGNIFICANCE OF R = NOT SIGNIFICANT Sb = +5.8815690E-04
t = +1.1201860E+00 SIGNIFICANCE OF t = NOT SIGNIFICANT Se = +3.6379172E-01
N = 168 DEGREES OF FREEDOM = 166
STORAGE CONDITIONS = AMB TEMP/RH. TEST CONDITIONS = AMB. TEMP/RH
PARAMETER = COHESIVE ENERGY
UNIT OF MEASURE = PSI
0.00
0.50
1.00
1.50
2.00
2.50
0.00
4.00
8.00
12.00
16.00
20.00
24.00
28.00
32.00
AGE AT TEST (YEARS)
STAGE 1 DISSECTED MOTOR=0012199,TEAR ENERGY,CHS=0.1 IN/MIN,T/TEMP=77 DEG.

Figure 35

**** LINEAR REGRESSION ANALYSIS ****

*** ANALYSIS OF TIME SERIES ***

AGE (MONTHS)	SPECIMENS PER GROUP	MEAN Y	STANDARD DEVIATION	MAXIMUM Y	MINIMUM Y	REGRESSION Y
144.0	8	+1.3054866E+00	+2.4540969E-01	+1.6974992E+00	+9.1229999E-01	+1.2738437E+00
151.0	15	+8.8811945E-01	+3.5060796E-01	+1.5583992E+00	+5.1189994E-01	+1.2784557E+00
168.0	11	+1.9317984E+00	+4.6594024E-01	+2.5883998E+00	+1.2885999E+00	+1.2896556E+00
177.0	8	+1.1311111E+00	+3.3515019E-01	+1.6190996E+00	+7.6609998E-01	+1.2955856E+00
191.0	8	+1.5033864E+00	+3.2887333E-01	+2.0490999E+00	+9.9919998E-01	+1.3048095E+00
202.0	10	+1.3446292E+00	+2.7193437E-01	+1.7876996E+00	+9.6319997E-01	+1.3120565E+00
217.0	8	+1.5829744E+00	+3.1690500E-01	+2.1384992E+00	+1.1258993E+00	+1.3219394E+00
230.0	9	+1.2281208E+00	+1.4474297E-01	+1.4004993E+00	+9.6739995E-01	+1.3305044E+00
231.0	8	+8.5437452E-01	+4.7410577E-02	+9.3389999E-01	+8.0999994E-01	+1.3311624E+00
241.0	9	+1.2973098E+00	+1.5053359E-01	+1.5008993E+00	+1.1089992E+00	+1.3377513E+00
251.0	16	+1.4568910E+00	+2.9180035E-01	+1.9488992E+00	+1.1238994E+00	+1.3443393E+00
270.0	16	+1.2427549E+00	+1.8624651E-01	+1.5693998E+00	+9.4729995E-01	+1.3568582E+00
273.0	16	+1.2914590E+00	+2.1166961E-01	+1.8765993E+00	+9.1219997E-01	+1.3588342E+00
286.0	26	+1.4463958E+00	+2.3829265E-01	+1.9445991E+00	+9.9499994E-01	+1.3673992E+00

STAGE 1,DISSECTED MOTOR=001219,TEAR ENERGY,CHS=0.1 IN/MIN,T/TEMP=77 DEG.

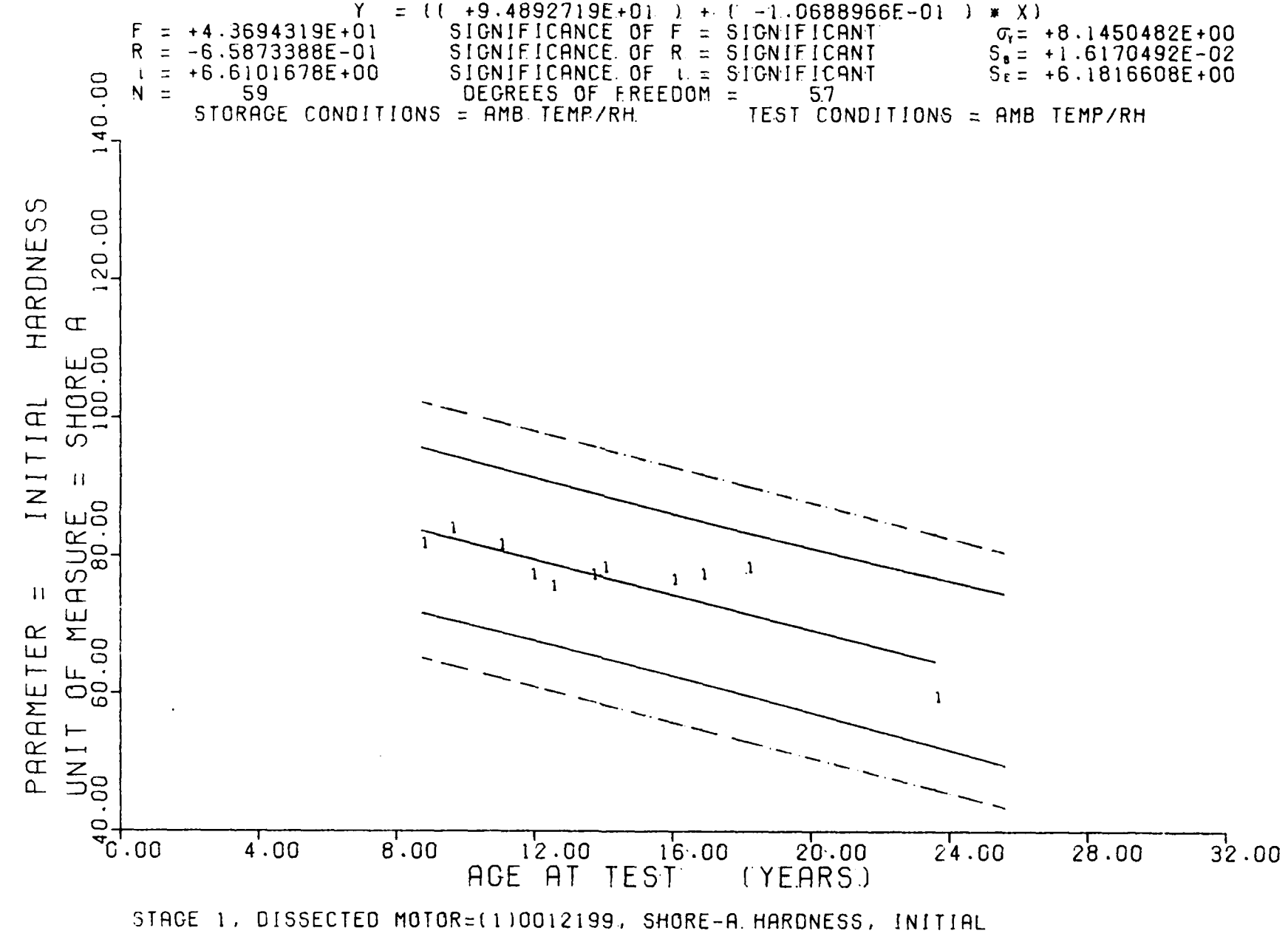

Y = ((+9.4892719E+01) + (-1.0688966E-01) * X)
F = +4.3694319E+01 SIGNIFICANCE OF F = SIGNIFICANT
R = -6.5873388E-01 SIGNIFICANCE OF R = SIGNIFICANT
N = 59 DEGREES OF FREEDOM = 57
STORAGE CONDITIONS = AMB TEMP/RH TEST CONDITIONS = AMB TEMP/RH
PARAMETER = INITIAL HARDNESS
UNIT OF MEASURE = SHORE A
40.00
60.00
80.00
100.00
120.00
140.00
0.00
4.00
8.00
12.00
16.00
20.00
24.00
28.00
32.00
AGE AT TEST (YEARS)
STAGE 1, DISSECTED MOTOR=(1)0012199, SHORE-A HARDNESS, INITIAL

Figure 36

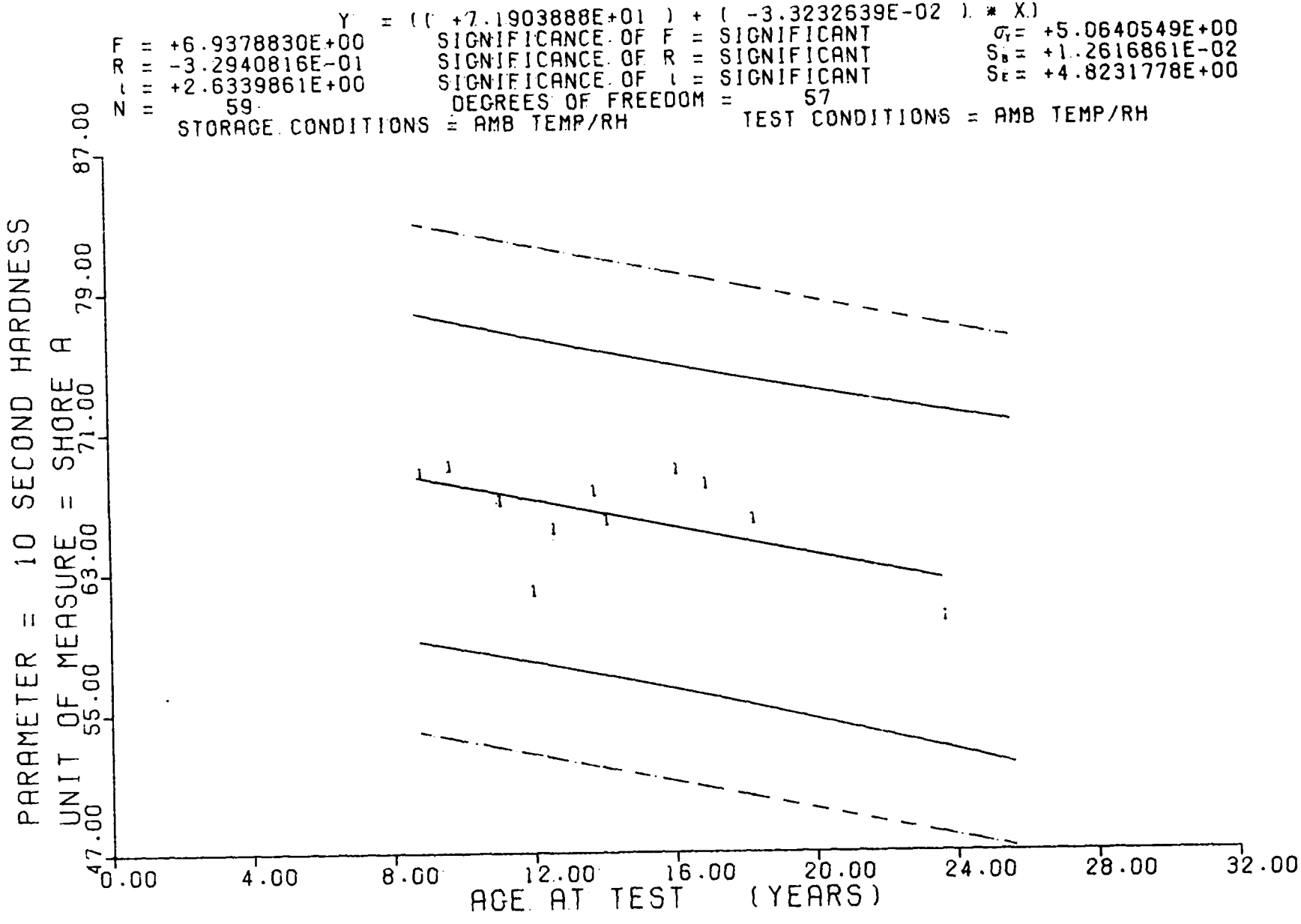
**** LINEAR REGRESSION ANALYSIS ****

*** ANALYSIS OF TIME SERIES ***

AGE (MONTHS)	SPECIMENS PER GROUP	MEAN Y	STANDARD DEVIATION	MAXIMUM Y	MINIMUM Y	REGRESSION Y
105.0	5	+8.1199996E+01	+1.3038404E+00	+8.3000000E+01	+8.0000000E+01	+8.3669296E+01
115.0	5	+8.3399993E+01	+5.4772255E-01	+8.4000000E+01	+8.3000000E+01	+8.2600402E+01
132.0	5	+8.1000000E+01	+1.0000000E+00	+8.2000000E+01	+8.0000000E+01	+8.0783279E+01
143.0	3	+7.6666656E+01	+5.7735026E-01	+7.7000000E+01	+7.6000000E+01	+7.9607482E+01
150.0	5	+7.5000000E+01	+1.0000000E+00	+7.6000000E+01	+7.4000000E+01	+7.8859268E+01
164.0	6	+7.6666656E+01	+8.1649658E-01	+7.8000000E+01	+7.6000000E+01	+7.7362808E+01
168.0	6	+7.7833328E+01	+7.5277265E-01	+7.9000000E+01	+7.7000000E+01	+7.6935241E+01
192.0	6	+7.6000000E+01	+0.0000000E+07	+7.6000000E+01	+7.6000000E+01	+7.4369888E+01
202.0	6	+7.6833328E+01	+1.1690451E+00	+7.8000000E+01	+7.5000000E+01	+7.3300994E+01
219.0	6	+7.7833328E+01	+7.5277265E-01	+7.9000000E+01	+7.7000000E+01	+7.1590759E+01
283.0	6	+5.8933258E+01	+1.7224259E+01	+8.0599990E+01	+3.0599990E+01	+6.4642929E+01

98

STAGE 1. DISSECTED MOTOR=(1)0012199. SHORE-A HARDNESS. INITIAL



STAGE 1, DISSECTED MOTOR=(1)0012199, SHORE-A HARDNESS, 10 SECOND.

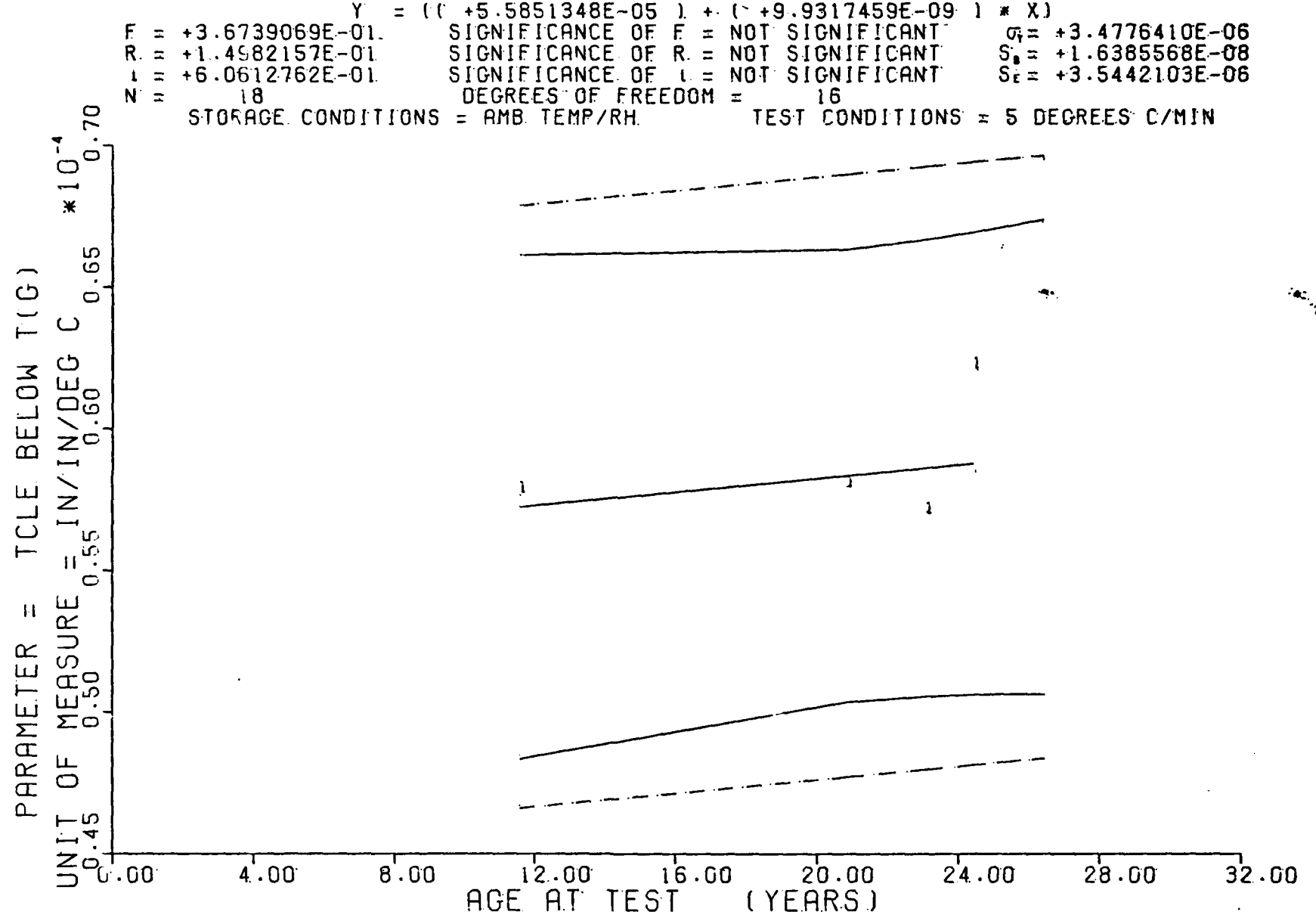
Figure 37

**** LINEAR REGRESSION ANALYSIS ****

*** ANALYSIS OF TIME SERIES ***

AGE (MONTHS)	SPECIMENS PER GROUP	MEAN Y	STANDARD DEVIATION	MAXIMUM Y	MINIMUM Y	REGRESSION Y
105.0	5	+6.8399993E+01	+1.5165750E+00	+7.0000000E+01	+6.7000000E+01	+6.8414459E+01
115.0	5	+6.8799987E+01	+1.0954451E+00	+7.0000000E+01	+6.7000000E+01	+6.8082122E+01
132.0	5	+6.6799987E+01	+2.2803508E+00	+6.9000000E+01	+6.4000000E+01	+6.7517166E+01
143.0	3	+6.1666656E+01	+1.5275252E+00	+6.3000000E+01	+6.0000000E+01	+6.7151611E+01
150.0	5	+6.5199996E+01	+4.4721359E-01	+6.6000000E+01	+6.5000000E+01	+6.6918991E+01
164.0	6	+6.7333328E+01	+8.1649658E-01	+6.8000000E+01	+6.6000000E+01	+6.6453735E+01
168.0	6	+6.5666656E+01	+1.2110601E+00	+6.7000000E+01	+6.4000000E+01	+6.6320800E+01
192.0	6	+6.8500000E+01	+1.0488088E+00	+7.0000000E+01	+6.7000000E+01	+6.5523208E+01
202.0	6	+6.7666656E+01	+1.5055453E+00	+7.0000000E+01	+6.6000000E+01	+6.5190887E+01
218.0	6	+6.5666656E+01	+1.2110601E+00	+6.7000000E+01	+6.4000000E+01	+6.4659164E+01
283.0	6	+6.0000000E+01	+1.4142135E+01	+8.0000000E+01	+4.0000000E+01	+6.2499038E+01

STAGE 1. DISSECTED MOTOR=(1)0012199. SHORE-A HARDNESS. 10 SECOND.



DISSECTED MTR=0012199, STAGE 1, THERMAL COEFFICIENT OF LINEAR EXPAN. BELOW TG

Figure 38

**** LINEAR REGRESSION ANALYSIS ****

*** ANALYSIS OF TIME SERIES ***

AGE (MONTHS)	SPECIMENS PER GROUP	MEAN Y	STANDARD DEVIATION	MAXIMUM Y	MINIMUM Y	REGRESSION Y
139.0	3	+5.7766650E-05	+5.6695387E-07	+5.9399993E-05	+5.7299999E-05	+5.7231853E-05
250.0	6	+5.7966593E-05	+2.8272668E-06	+6.1399987E-05	+5.2899995E-05	+5.8334277E-05
277.0	6	+5.7016615E-05	+2.6575016E-06	+6.0099991E-05	+5.2099989E-05	+5.8602439E-05
293.0	3	+6.2133316E-05	+6.0928284E-06	+6.5999986E-05	+5.5299999E-05	+5.8761346E-05

DISSECTED MTR=0012199, STAGE 1, GLASS TRANSITION TEMPERATURE (BELOW TG)

96

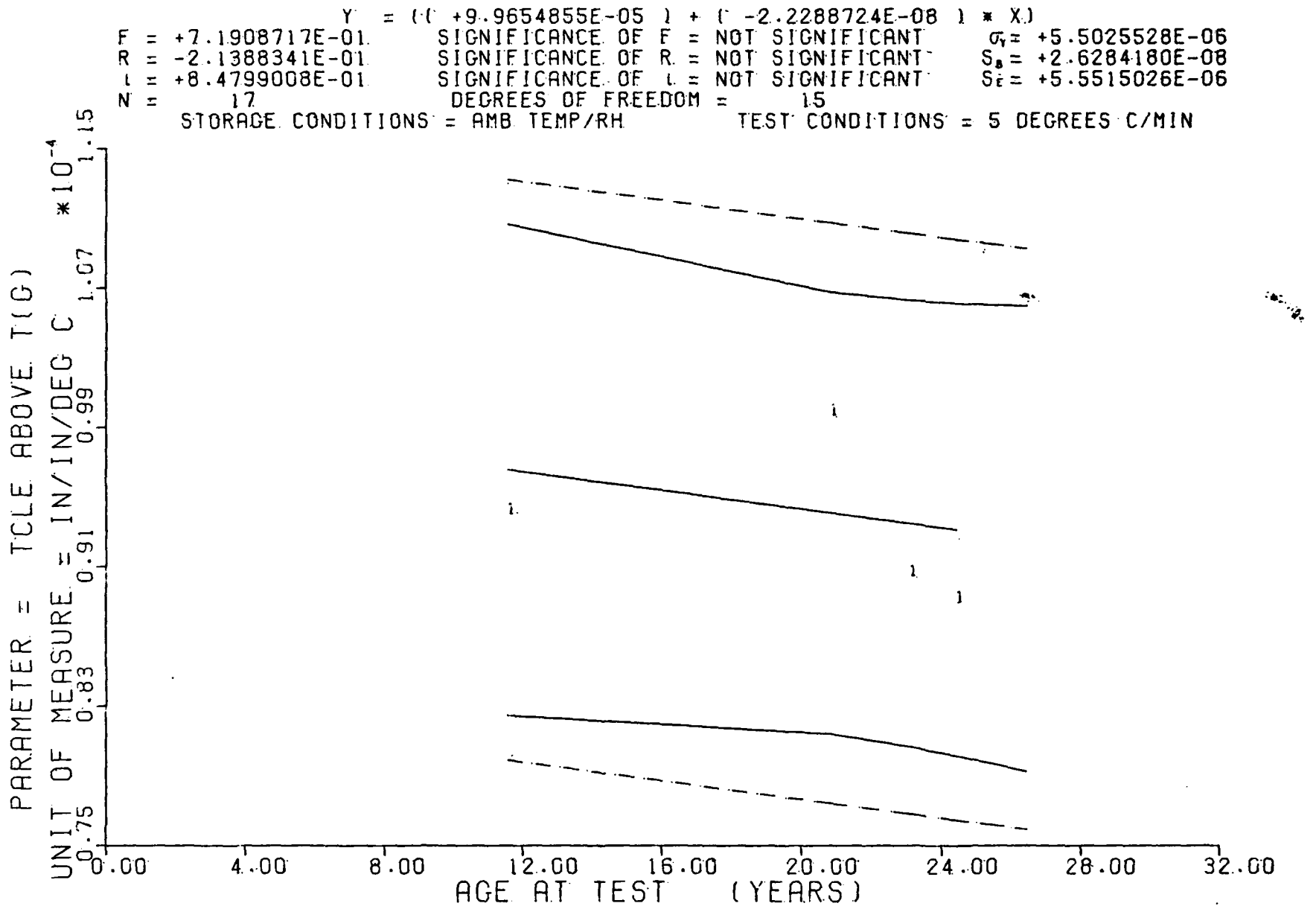

Y = ((+9.9654855E-05) + (-2.2288724E-08) * X)
F = +7.1908717E-01 SIGNIFICANCE OF F = NOT SIGNIFICANT σY = +5.5025528E-06
R = -2.1388341E-01 SIGNIFICANCE OF R = NOT SIGNIFICANT Sb = +2.6284180E-08
t = +8.4799008E-01 SIGNIFICANCE OF t = NOT SIGNIFICANT Se = +5.5515026E-06
N = 17 DEGREES OF FREEDOM = 15
STORAGE CONDITIONS = AMB TEMP/RH TEST CONDITIONS = 5 DEGREES C/MIN
PARAMETER = TCLE ABOVE T(G)
UNIT OF MEASURE = IN/IN/DEG C *10⁻⁴
1.15
1.07
0.99
0.91
0.83
0.75
0.00
4.00
8.00
12.00
16.00
20.00
24.00
28.00
32.00
AGE AT TEST (YEARS)
DISSECTED MTR=0012199, STAGE 1, THERMAL COEFFICIENT OF LINEAR EXPAN. ABOVE TG

Figure 39

**** LINEAR REGRESSION ANALYSIS ****

*** ANALYSIS OF TIME SERIES ***

AGE (MONTHS)	SPECIMENS PER GROUP	MEAN Y	STANDARD DEVIATION	MAXIMUM Y	MINIMUM Y	REGRESSION Y
139.0	3	+9.4033312E-05	+2.9511557E-07	+9.4199989E-05	+9.3699985E-05	+9.6556716E-05
250.0	6	+9.9716591E-05	+3.1778365E-06	+1.0399999E-04	+9.6499992E-05	+9.4082672E-05
277.0	6	+9.0493299E-05	+2.9201873E-06	+9.3099995E-05	+8.5799998E-05	+9.3480877E-05
293.0	2	+8.8999993E-05	+8.6266363E-06	+9.5099996E-05	+8.2899990E-05	+9.3124253E-05

DISSECTED MTR=0012199, STAGE 1, GLASS TRANSITION TEMPERATURE (ABOVE TG)

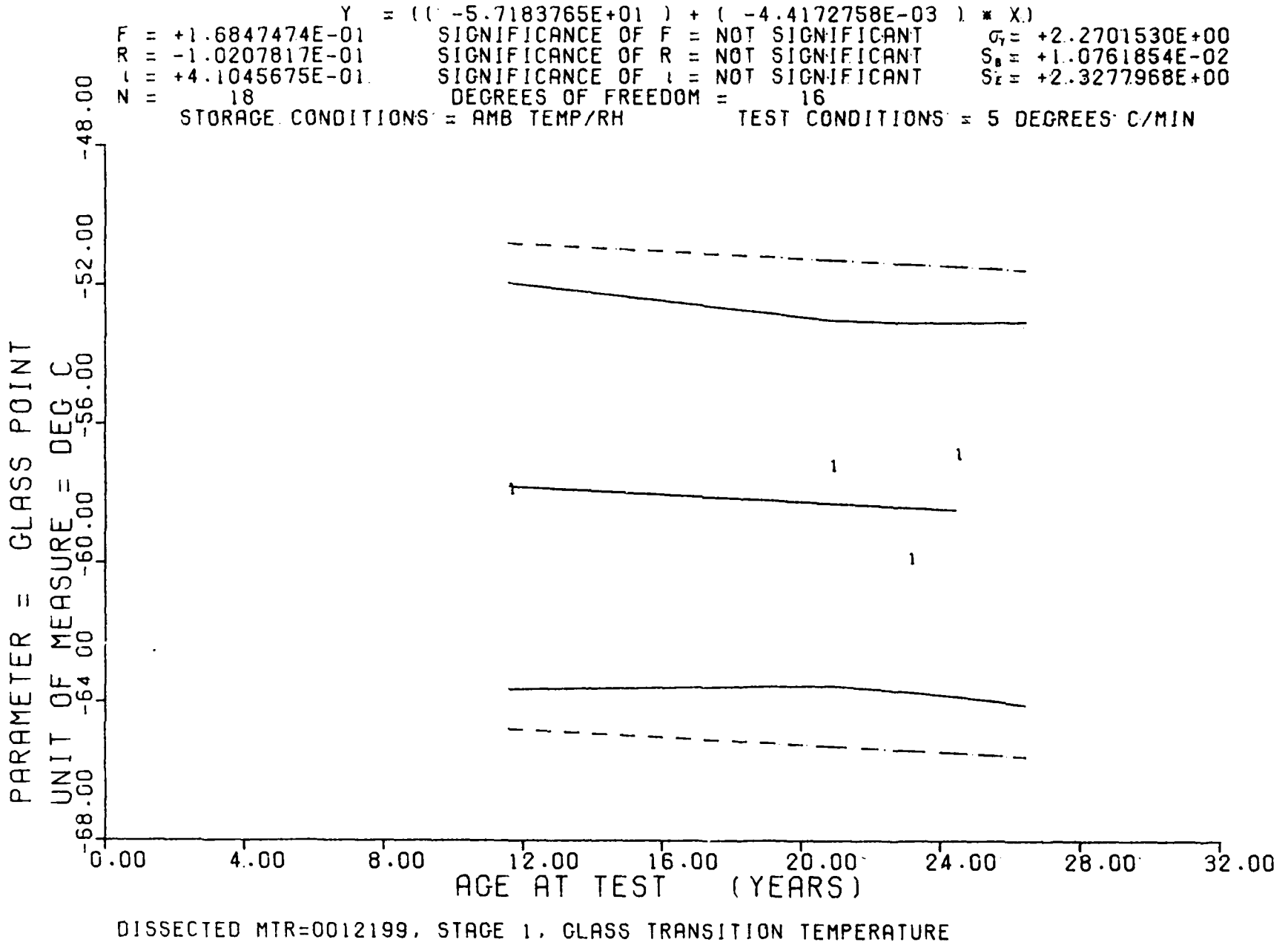

Y = ((-5.7183765E+01) + (-4.4172758E-03) * X)
F = +1.6847474E-01 SIGNIFICANCE OF F = NOT SIGNIFICANT σ = +2.2701530E+00
R = -1.0207817E-01 SIGNIFICANCE OF R = NOT SIGNIFICANT S = +1.0761854E-02
ι = +4.1045675E-01 SIGNIFICANCE OF ι = NOT SIGNIFICANT S = +2.3277968E+00
N = 18 DEGREES OF FREEDOM = 16
STORAGE CONDITIONS = AMB TEMP/RH TEST CONDITIONS = 5 DEGREES C/MIN
PARAMETER = GLASS POINT
UNIT OF MEASURE = DEG C
-48.00
-52.00
-56.00
-60.00
-64.00
-68.00
0.00
4.00
8.00
12.00
16.00
20.00
24.00
28.00
32.00
AGE AT TEST (YEARS)
DISSECTED MTR=0012199, STAGE 1, GLASS TRANSITION TEMPERATURE

Figure 40

**** LINEAR REGRESSION ANALYSIS ****

*** ANALYSIS OF TIME SERIES ***

AGE (MONTHS)	SPECIMENS PER GROUP	MEAN Y	STANDARD DEVIATION	MAXIMUM Y	MINIMUM Y	REGRESSION Y
139.0	3	-5.8000000E+01	+1.0000000E+00	-5.7000000E+01	-5.9000000E+01	-5.7797760E+01
250.0	6	-5.7333328E+01	+1.8618986E+00	-5.5000000E+01	-6.1000000E+01	-5.8288070E+01
277.0	6	-6.0000000E+01	+2.5298221E+00	-5.8000000E+01	-6.4000000E+01	-5.8407348E+01
293.0	3	-5.7000000E+01	+1.9999999E+00	-5.5000000E+01	-5.9000000E+01	-5.8478027E+01

DISSECTED MTR=0012199, STAGE 1, GLASS TRANSITION TEMPERATURE

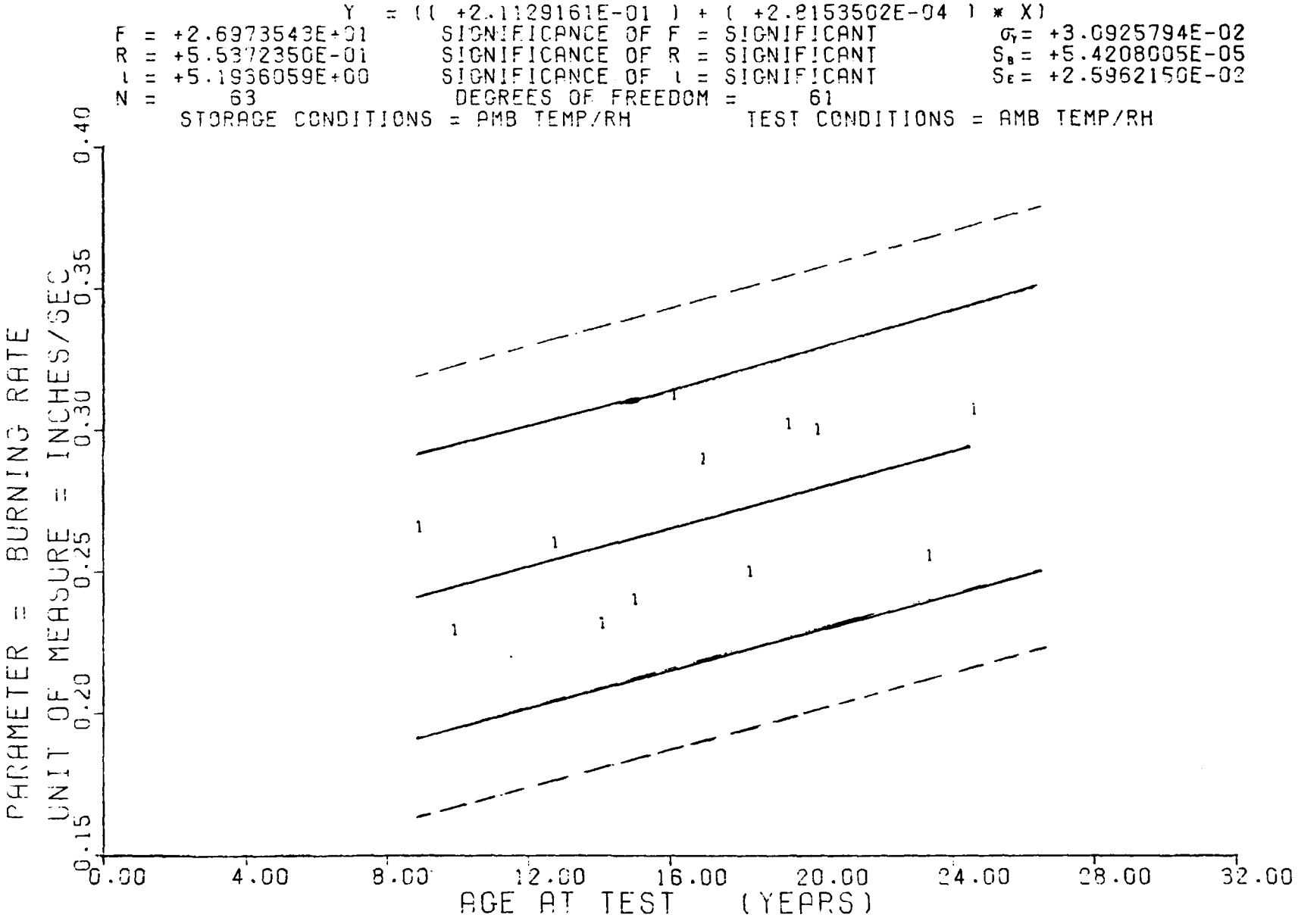

Y = ((+2.1129161E-01) + (+2.8153502E-04) * X)
F = +2.6973543E+01 SIGNIFICANCE OF F = SIGNIFICANT σy = +3.0925794E-02
R = +5.5372350E-01 SIGNIFICANCE OF R = SIGNIFICANT Sb = +5.4208005E-05
t = +5.1936059E+00 SIGNIFICANCE OF t = SIGNIFICANT Sε = +2.5962150E-02
N = 63 DEGREES OF FREEDOM = 61
STORAGE CONDITIONS = AMB TEMP/RH TEST CONDITIONS = AMB TEMP/RH
PARAMETER = BURNING RATE
UNIT OF MEASURE = INCHES/SEC
0.15
0.20
0.25
0.30
0.35
0.40
0.00
4.00
8.00
12.00
16.00
20.00
24.00
28.00
32.00
AGE AT TEST (YEARS)
STAGE 1,DISSECTED MOTOR=(1)0012139,BURNING RATE AT 500 PSI INITIAL PRESSURE.

Figure 41

**** LINEAR REGRESSION ANALYSIS ****

*** ANALYSIS OF TIME SERIES ***

AGE (MONTHS)	SPECIMENS PER GROUP	MEAN Y	STANDARD DEVIATION	MAXIMUM Y	MINIMUM Y	REGRESSION Y
106.0	5	+2.6419979E-01	+2.2954995E-03	+2.6799994E-01	+2.6199996E-01	+2.4113428E-01
118.0	5	+2.7779977E-01	+4.9807506E-03	+2.8299998E-01	+2.7199994E-01	+2.4451273E-01
152.0	6	+2.5866651E-01	+2.3098162E-02	+3.0199998E-01	+2.4399995E-01	+2.5408488E-01
168.0	6	+2.8033314E-01	+7.9696300E-03	+2.4099999E-01	+2.1799999E-01	+2.5858944E-01
179.0	6	+2.8883306E-01	+1.6439691E-02	+2.7199995E-01	+2.2999995E-01	+2.6168632E-01
192.0	3	+3.1109994E-01	+3.9502346E-03	+3.1509995E-01	+3.0719995E-01	+2.6534628E-01
202.0	6	+2.8833305E-01	+6.8120872E-03	+2.9499995E-01	+2.7799999E-01	+2.6916165E-01
218.0	3	+2.4966664E-01	+1.1518481E-03	+2.5000000E-01	+2.4799996E-01	+2.7266621E-01
231.0	3	+3.0066663E-01	+3.0529920E-03	+3.0399996E-01	+2.9799997E-01	+2.7632617E-01
241.0	5	+2.9875981E-01	+4.3638794E-03	+3.0619996E-01	+2.9479998E-01	+2.7914154E-01
279.0	6	+2.5416642E-01	+1.2209257E-02	+2.6699995E-01	+2.3899996E-01	+2.8983986E-01
294.0	9	+3.0562174E-01	+7.6029565E-03	+3.1969994E-01	+2.9579997E-01	+2.9406285E-01

96

STAGE 1,DISSECTED MOTOR=(1)0012199,BURNING RATE AT 500 PSI INITIAL PRESSURE.

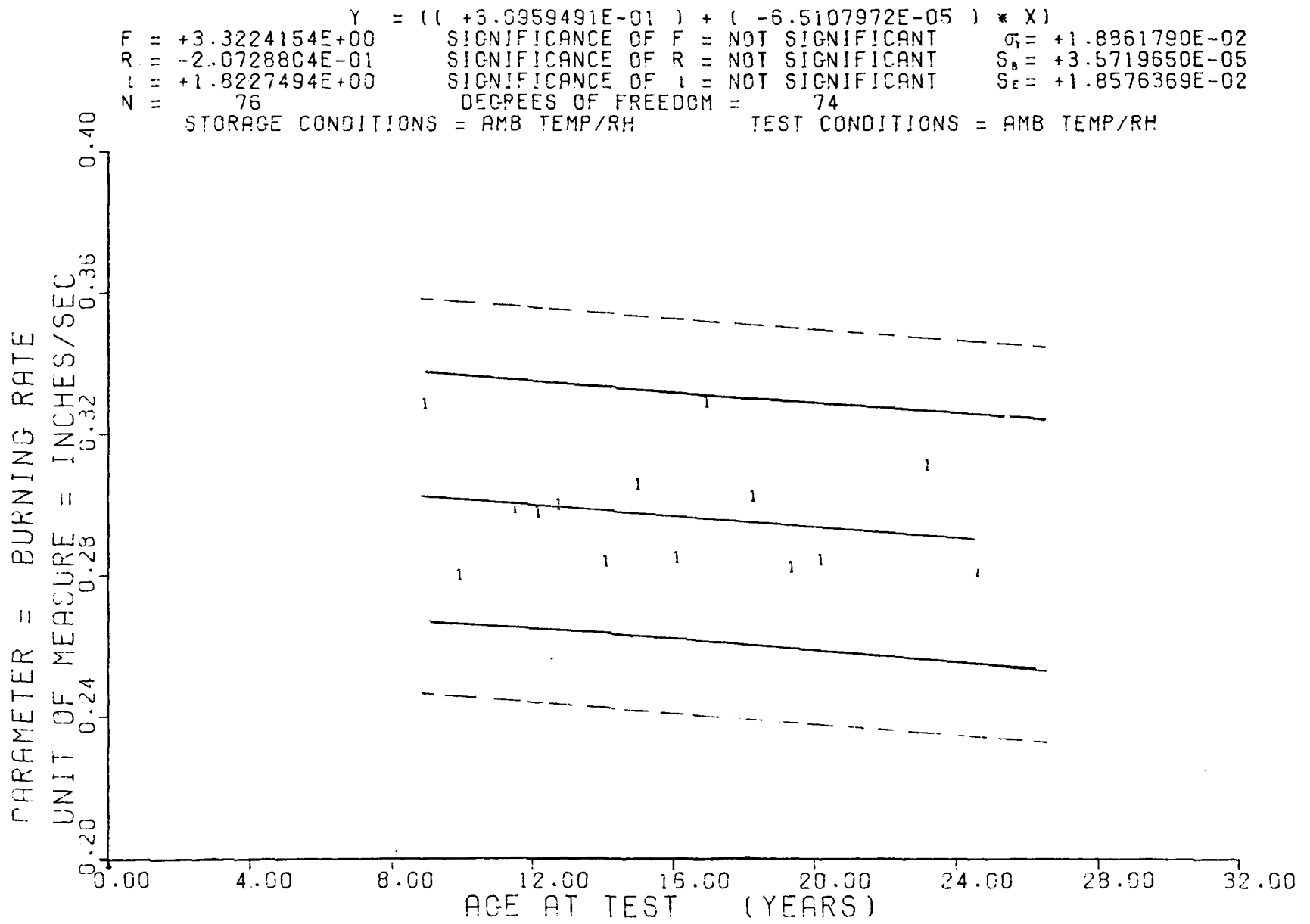

Y = ((+3.0959491E-01) + (-6.5107972E-05) * X)
F = +3.3224154E+00 SIGNIFICANCE OF F = NOT SIGNIFICANT σ1 = +1.8861790E-02
R = -2.0728804E-01 SIGNIFICANCE OF R = NOT SIGNIFICANT Sb = +3.5719650E-05
t = +1.8227494E+00 SIGNIFICANCE OF t = NOT SIGNIFICANT Se = +1.8576369E-02
N = 76 DEGREES OF FREEDOM = 74
STORAGE CONDITIONS = AMB TEMP/RH TEST CONDITIONS = AMB TEMP/RH
PARAMETER = BURNING RATE
UNIT OF MEASURE = INCHES/SEC
0.40
0.36
0.32
0.28
0.24
0.20
0.00
4.00
8.00
12.00
16.00
20.00
24.00
28.00
32.00
AGE AT TEST (YEARS)
STAGE 1,DISSECTED MOTOR=(1)0012199,BURNING RATE AT 1000 PSI INITIAL PRESSURE.

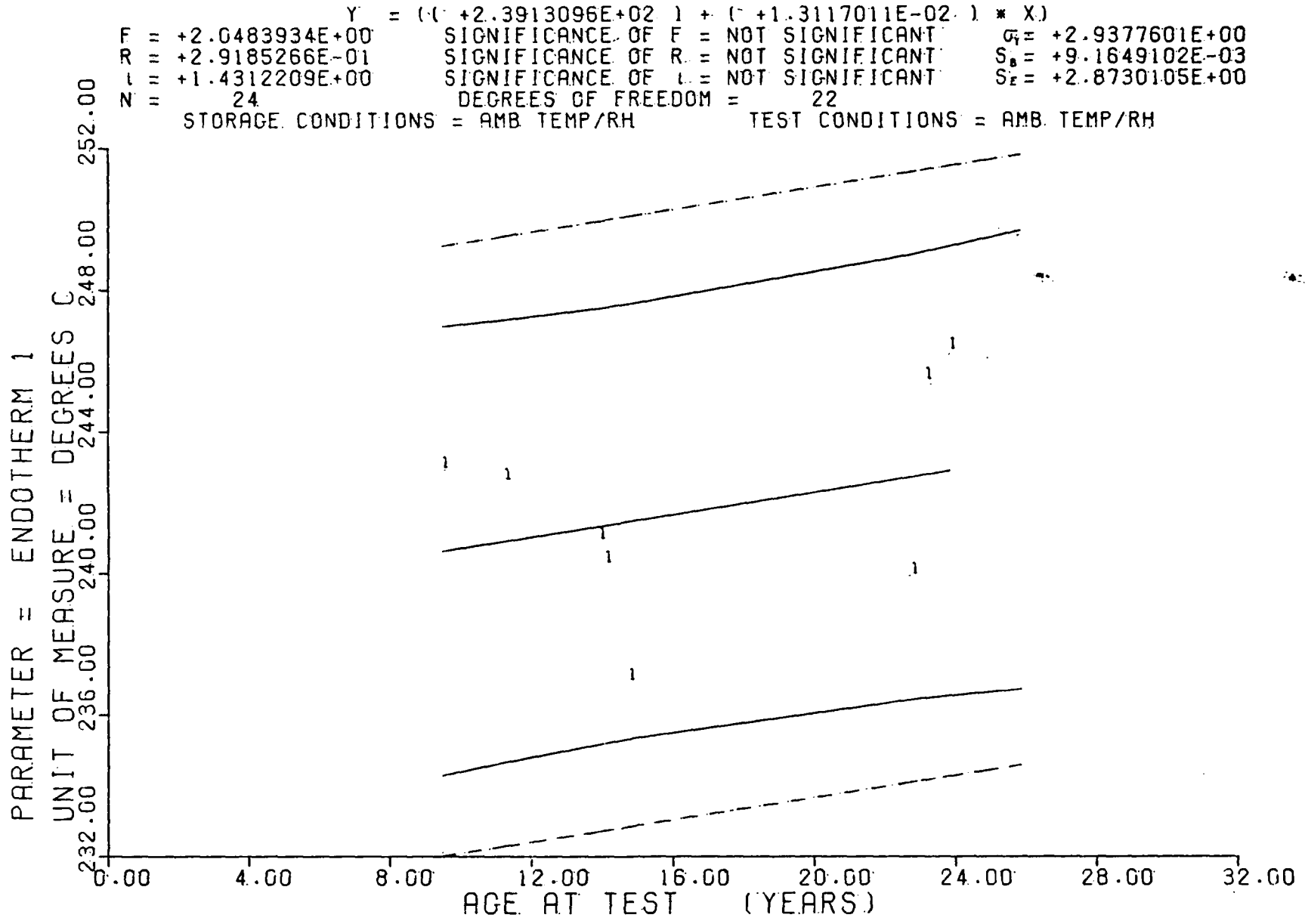
Figure 42

**** LINEAR REGRESSION ANALYSIS ****

*** ANALYSIS OF TIME SERIES ***

AGE (MONTHS)	SPECIMENS PER GROUP	MEAN Y	STANDARD DEVIATION	MAXIMUM Y	MINIMUM Y	REGRESSION Y
106.0	5	+3.2739979E-01	+5.4671778E-03	+3.3199995E-01	+3.2099997E-01	+3.0269342E-01
119.0	5	+2.7899968E-01	+7.4953729E-03	+2.8799998E-01	+2.7199995E-01	+3.0191212E-01
137.0	8	+2.9787468E-01	+4.1430658E-03	+3.0399996E-01	+2.9399996E-01	+3.0067509E-01
145.0	6	+2.9683303E-01	+4.5541523E-03	+2.9999995E-01	+2.8799998E-01	+3.0015420E-01
152.0	5	+2.9879997E-01	+1.4909735E-03	+3.0099999E-01	+2.9699999E-01	+2.9969847E-01
168.0	6	+2.8283292E-01	+9.2733389E-03	+2.9499995E-01	+2.7299994E-01	+2.9865676E-01
179.0	6	+3.0466634E-01	+3.3341548E-02	+3.6399996E-01	+2.7799999E-01	+2.9794055E-01
192.0	3	+2.8406661E-01	+2.0050004E-03	+2.8629994E-01	+2.8239995E-01	+2.9709416E-01
202.0	6	+3.2799971E-01	+1.0514737E-02	+3.3899998E-01	+3.1199997E-01	+2.9644310E-01
219.0	3	+3.0133324E-01	+2.3112752E-03	+3.0399996E-01	+2.9999995E-01	+2.9540133E-01
231.0	3	+2.8133326E-01	+5.6340067E-04	+2.8199994E-01	+2.8099995E-01	+2.9455494E-01
241.0	5	+2.8339976E-01	+1.1142458E-03	+2.8499996E-01	+2.8229999E-01	+2.9390388E-01
277.0	6	+3.0599976E-01	+2.3103124E-03	+3.1199997E-01	+3.0599999E-01	+2.9155999E-01
294.0	9	+2.7999979E-01	+3.5683488E-03	+2.8409999E-01	+2.7549999E-01	+2.9045313E-01

STAGE 1,DISSECTED MOTOR=(1)0012199,BURNING RATE AT 1000 PSI INITIAL PRESSURE.



STAGE 1,DISSECTED MTR=(1)0012199,DTA,ENDOTHERM 1, 12 DEG C RISE/MIN.

Figure 43

**** LINEAR REGRESSION ANALYSIS ****

*** ANALYSIS OF TIME SERIES ***

AGE (MONTHS)	SPECIMENS PER GROUP	MEAN Y	STANDARD DEVIATION	MAXIMUM Y	MINIMUM Y	REGRESSION Y
114.0	3	+2.4300000E+02	+0.0000000E+07	+2.4300000E+02	+2.4300000E+02	+2.4062629E+02
135.0	3	+2.4266665E+02	+5.7735026E-01	+2.4300000E+02	+2.4200000E+02	+2.4090176E+02
167.0	3	+2.4100000E+02	+1.0000000E+00	+2.4200000E+02	+2.4000000E+02	+2.4132150E+02
169.0	3	+2.4033332E+02	+5.7735026E-01	+2.4100000E+02	+2.4000000E+02	+2.4134773E+02
177.0	3	+2.3700000E+02	+0.0000000E+07	+2.3700000E+02	+2.3700000E+02	+2.4145266E+02
273.0	4	+2.4000000E+02	+0.0000000E+07	+2.4000000E+02	+2.4000000E+02	+2.4271191E+02
278.0	2	+2.4550000E+02	+7.0710678E-01	+2.4600000E+02	+2.4500000E+02	+2.4277749E+02
286.0	3	+2.4633332E+02	+2.0816659E+00	+2.4800000E+02	+2.4400000E+02	+2.4288243E+02

STAGE 1,DISSECTED MTR=(1)0012199,DTA,ENDOTHERM 1, 12 DEG C RISE/MIN.

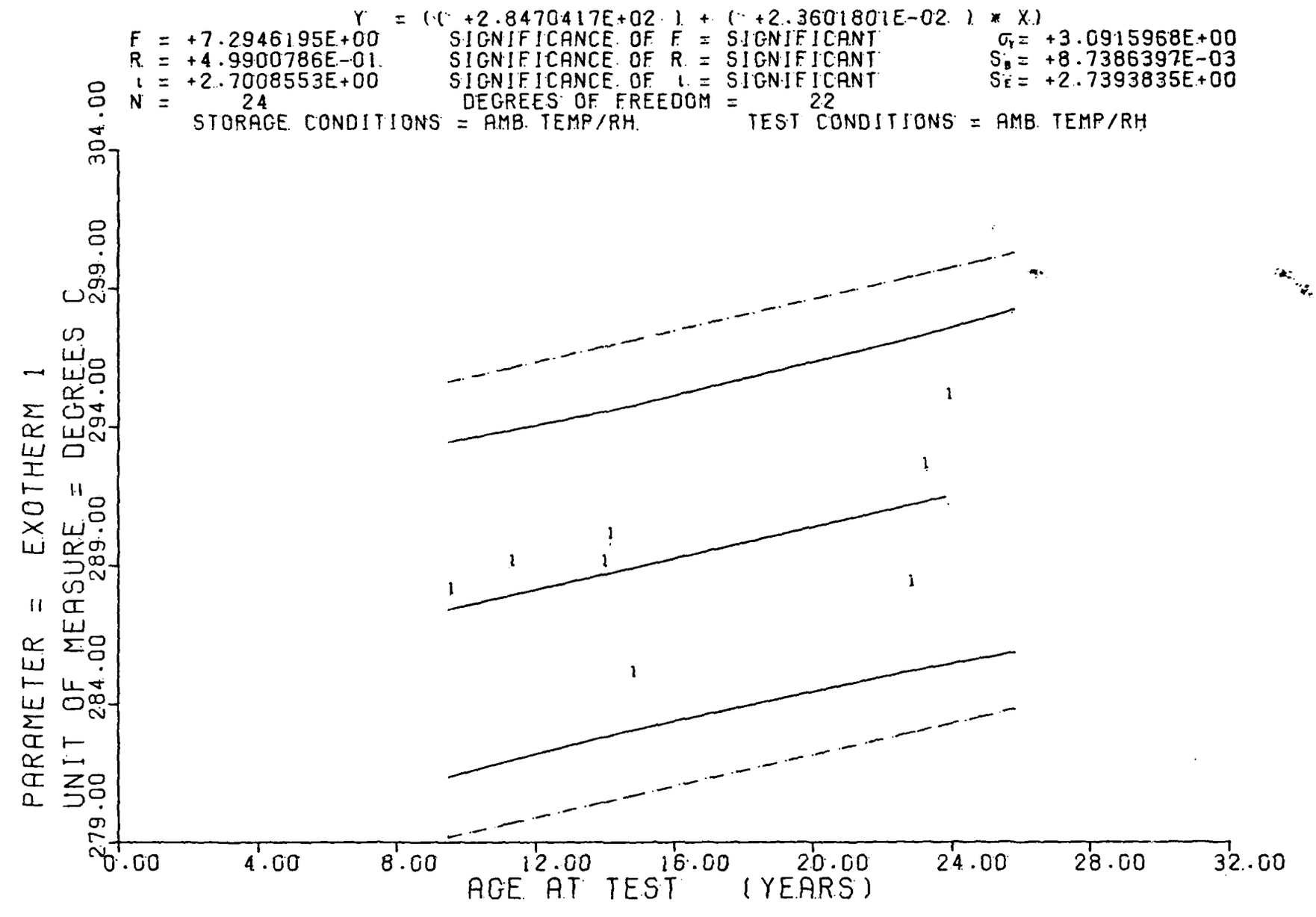

Y = ((+2.8470417E+02) + (+2.3601801E-02) * X)
F = +7.2946195E+00 SIGNIFICANCE OF F = SIGNIFICANT σY = +3.0915968E+00
R = +4.9900786E-01 SIGNIFICANCE OF R = SIGNIFICANT Sb = +8.7386397E-03
t = +2.7008553E+00 SIGNIFICANCE OF t = SIGNIFICANT Se = +2.7393835E+00
N = 24 DEGREES OF FREEDOM = 22
STORAGE CONDITIONS = AMB TEMP/RH TEST CONDITIONS = AMB TEMP/RH
PARAMETER = EXOTHERM 1
UNIT OF MEASURE = DEGREES C
304.00
299.00
294.00
289.00
284.00
279.00
0.00
4.00
8.00
12.00
16.00
20.00
24.00
28.00
32.00
AGE AT TEST (YEARS)
STAGE 1,DISSECTED MTR=(1)0012199,DTA,EXOTHERM 1, 12 DEG C RISE/MIN.

Figure 44

**** LINEAR REGRESSION ANALYSIS ****

*** ANALYSIS OF TIME SERIES ***

AGE (MONTHS)	SPECIMENS PER GROUP	MEAN Y	STANDARD DEVIATION	MAXIMUM Y	MINIMUM Y	REGRESSION Y
114.0	3	+2.8800000E+02	+0.0000000E+07	+2.8800000E+02	+2.8800000E+02	+2.8739477E+02
135.0	3	+2.9000000E+02	+1.0000000E+00	+2.9000000E+02	+2.8800000E+02	+2.8789038E+02
167.0	3	+2.8900000E+02	+1.7320508E+00	+2.9000000E+02	+2.8700000E+02	+2.8864550E+02
169.0	3	+2.9000000E+02	+0.0000000E+07	+2.9000000E+02	+2.9000000E+02	+2.8869287E+02
177.0	3	+2.8500000E+02	+1.9999999E+00	+2.8700000E+02	+2.8300000E+02	+2.8888159E+02
273.0	4	+2.8825000E+02	+5.0000000E-01	+2.8900000E+02	+2.8800000E+02	+2.9114746E+02
278.0	2	+2.9250000E+02	+7.0710678E-01	+2.9300000E+02	+2.9200000E+02	+2.9126538E+02
286.0	3	+2.9500000E+02	+2.9999999E+00	+2.9800000E+02	+2.9200000E+02	+2.9145410E+02

STAGE 1.DISSECTED MTR=(1)00121C9.DTA.EXCTHERM 1. 12 DEG C RISE/MIN.

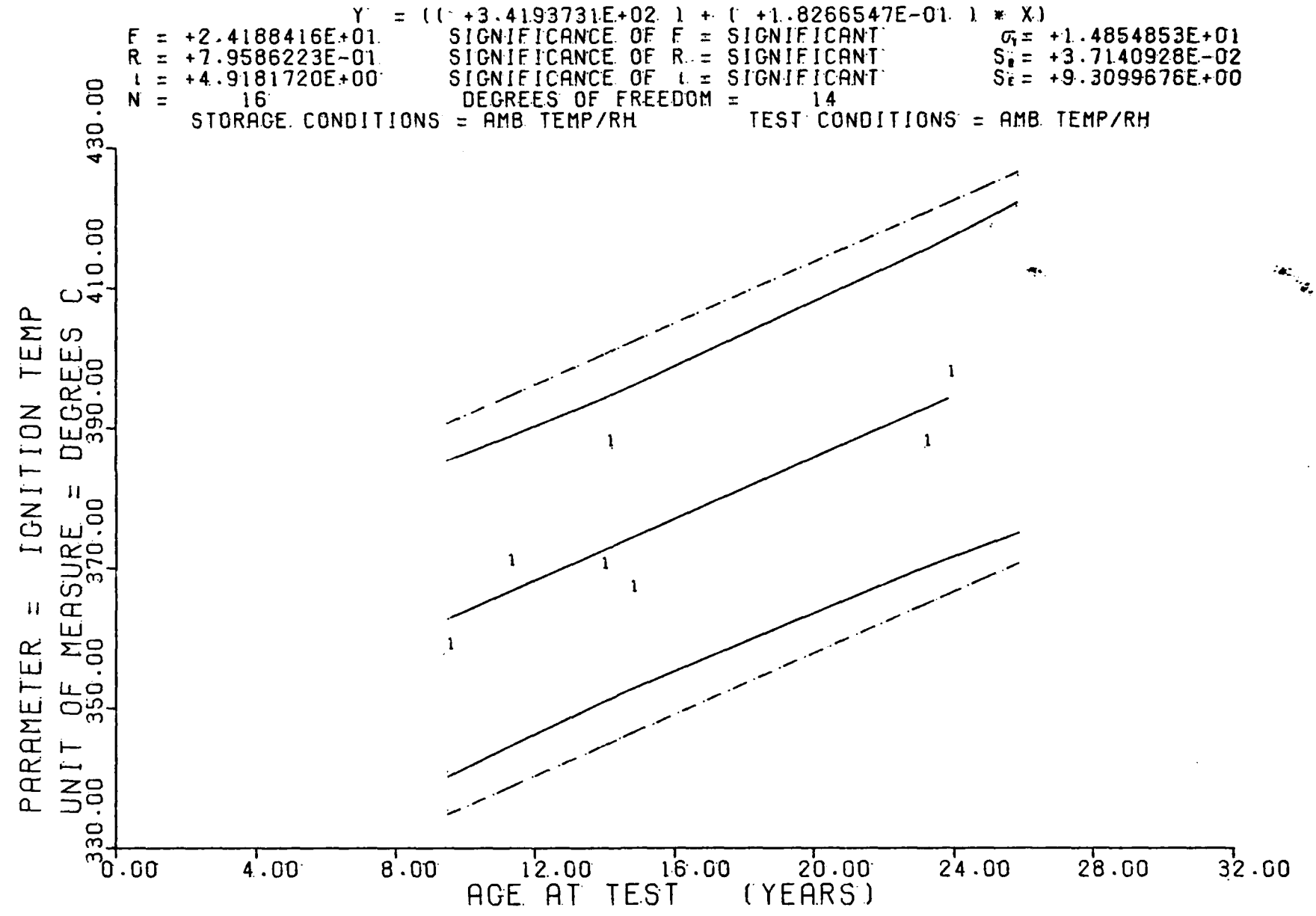

Y = ((+3.4193731E+02) + (+1.8266547E-01) * X)
F = +2.4188416E+01 SIGNIFICANCE OF F = SIGNIFICANT σ1 = +1.4854853E+01
R = +7.9586223E-01 SIGNIFICANCE OF R = SIGNIFICANT Sβ = +3.7140928E-02
t = +4.9181720E+00 SIGNIFICANCE OF t = SIGNIFICANT Sε = +9.3099676E+00
N = 16 DEGREES OF FREEDOM = 14
STORAGE CONDITIONS = AMB TEMP/RH TEST CONDITIONS = AMB TEMP/RH
PARAMETER = IGNITION TEMP
UNIT OF MEASURE = DEGREES C
330.00
350.00
370.00
390.00
410.00
430.00
0.00
4.00
8.00
12.00
16.00
20.00
24.00
28.00
32.00
AGE AT TEST (YEARS)
STAGE 1,DISSECTED MTR=(1)0012199,DTA,IGNITION TEMP,12 DEG C RISE/MIN.

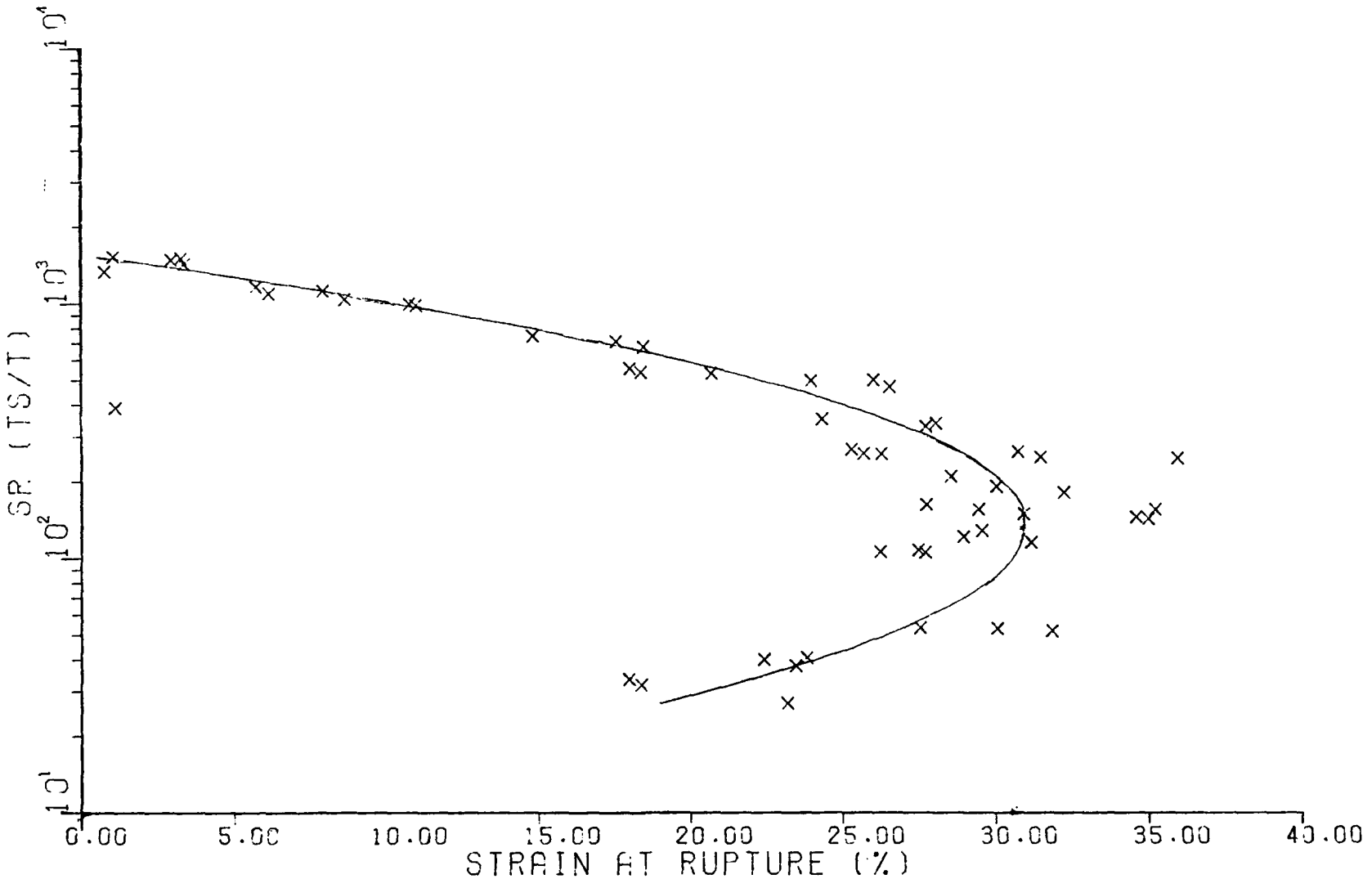
Figure 45

**** LINEAR REGRESSION ANALYSIS ****

*** ANALYSIS OF TIME SERIES ***

AGE (MONTHS)	SPECIMENS PER GROUP	MEAN Y	STANDARD DEVIATION	MAXIMUM Y	MINIMUM Y	REGRESSION Y
114.0	2	+3.5850000E+02	+7.7781745E+00	+3.6400000E+02	+3.5300000E+02	+3.6276098E+02
135.0	2	+3.7050000E+02	+7.7781745E+00	+3.7600000E+02	+3.6500000E+02	+3.6659692E+02
167.0	2	+3.7000000E+02	+7.0710678E+00	+3.7500000E+02	+3.6500000E+02	+3.7244238E+02
169.0	2	+3.8750000E+02	+3.5355339E+00	+3.9000000E+02	+3.8500000E+02	+3.7280761E+02
177.0	3	+3.6666650E+02	+9.0184995E+00	+3.7600000E+02	+3.5800000E+02	+3.7426904E+02
278.0	2	+3.8750000E+02	+7.0710678E-01	+3.8800000E+02	+3.8700000E+02	+3.9271826E+02
286.0	3	+3.9733325E+02	+7.0237691E+00	+4.0400000E+02	+3.9000000E+02	+3.9417944E+02

STAGE 1.DISSECTED MTR=(1)0012199.DTA.IGNITION TEMP.12 DEG C RISE/MIN.



STAGE I, MOTOR NR. 0012199, FAILURE ENVELOPE RANGE: 008701-0087365

Figure 46

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19. ABSTRACT (Continue on reverse if necessary and identify by block number)

Testing was performed to determine the useful shelf/service life for the LGM-30 Stage I Rocket Motors. A three year storage program for propellant and components was started in May 1961. This program was then extended to a ten year study and later continued indefinitely to assure that deterioration in motor physical characteristics could be detected in time to take some corrective actions before the weapon system performance deteriorated below an acceptable level.

This report covers propellant test data for motor S/N 0012199. Planned dissection of selected motors in the future will provide samples for continued component testing.

The data is presented in the form of regression analysis and the trends are projected 24 months beyond the last test date.

From the statistical analysis of all data tested to date, significant degradation of the propellant does not appear likely for at least two years past the oldest data point.

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